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Students' Experiences with Personalized Learning: An Examination Using Self-Determination Theory

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STUDENTS' EXPERIENCES WITH PERSONALIZED LEARNING: AN EXAMINATION USING SELF-DETERMINATION THEORY

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Abstract

In recent years, personalized learning has become a buzzword in the field of education and an approach that schools across the United States have adopted in their attempts to account for the diverse interests, aspirations, and needs of their students. Despite the growing interest in personalized learning, there is a dearth of empirical research on this educational approach, particularly as it relates to the student experience. Given the paucity of research in this area, little is known about the extent to which personalized learning can offer students a more beneficial quality of experience than traditional educational methods. This question is further complicated by the fact that personalized learning has been defined and put into practice in diverse ways. Given these conditions, the purpose of this study was to explore students' experiences with more humanistic forms of personalized learning at three high schools in Vermont. A pragmatic approach to qualitative research was used along with self-determination theory (SDT) as a framework to investigate students' perceptions of their autonomy, competence, relatedness, motivation, and well-being within the context of personalized learning. SDT was used as framework because it offers a lens for analyzing how social contexts affect people's experiences and proposes that individuals experience higher qualities of motivation, engagement, and performance when their basic psychological needs for autonomy, competence, and relatedness are met. Study findings, which are based on interviews with 28 students from three Vermont high schools, suggest participants generally felt autonomous, competent, and related in their personalized learning environments, which contributed to their intrinsic motivation, engagement, and well-being within these settings. Some features of personalized learning that supported multiple facets of students' basic psychological needs were the individualized nature of instruction, student-driven curriculum, and structures that enabled and supported community-based learning. Although many students suggested personalized learning supported their basic psychological needs, some struggled to direct and manage their own learning, which diminished their feelings of competence while others indicated that the individualized nature of their projects undermined their sense of relatedness to their peers. Overall, the findings indicate that humanistic approaches to personalized learning have the potential to contribute to a more beneficial quality of experience for high school students than traditional educational methods. The study has implications for educational policy and practice as it suggests personalization may be an effective approach for engaging a variety of students with their education and promoting the skills and dispositions for lifelong learning.

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Chapter 1: Introduction

> The trouble with traditional education was not that educators took upon themselves the responsibility for providing an environment. The trouble was that they did not consider the other factor in creating an experience; namely, the powers and purposes of those taught. It was assumed that a certain set of conditions was intrinsically desirable, apart from its ability to evoke a certain quality of response in individuals. This lack of mutual adaptation made the process of teaching and learning accidental. Those to whom the provided conditions were suitable managed to learn. Others got on as best they could. Responsibility for selecting objective conditions carries with it, then, the responsibility for understanding the needs and capacities of the individuals who are learning at a given time. (Dewey, 1938, pp. 45-46)

The Problem of Standardization

In his seminal work, *Experience and Education*, John Dewey laid bare what he viewed as a fundamental problem with traditional schooling, namely its inattention to the motivations, needs, and capacities of learners. For Dewey, interaction between individuals and the environment was at the heart of the educational process. Each student came to a learning situation with a unique set of motivations, needs, purposes, and capacities that interacted with the environment (i.e., the social context, curriculum, and teaching methods) to create experiences that could be "educative" or "mis-educative." Educative experiences piqued curiosity and promoted personal growth while mis-educative experiences restricted "the possibilities of having richer experience in the future" by "engender[ing] callousness" or "produc[ing] lack of sensitivity and responsiveness" (Dewey, 1938, pp. 25-26). Dewey believed traditional schooling produced mis-educative experiences for many students because it all but ignored individuals' purposes and needs and assumed certain subjects and teaching methods held inherent educational value. As Dewey wrote:

> The trouble with traditional education was not that it emphasized the external conditions that enter into the control of the experiences but that it paid so little attention to the internal factors which also decide what kind of experience is had. It violated the principle of interaction from one side. (Dewey, 1938, p. 42)

For Dewey, the principle of interaction signified that objective and internal conditions were equally important in determining the type of experience an individual had. Within the context of education, this meant that students' motivations, aspirations, and needs made an equal contribution to the types of experiences they had as the curriculum and teachers' instruction. Because it relied on relatively prescribed curriculum and instructional methods without accounting for students' "internal conditions," Dewey believed traditional education violated the principle of interaction and therefore contributed to mis-educative experiences for many students in school.

Dewey's (1938) analysis of "traditional education" still rings true more than 75 years after the publication of *Experience and Education* as imposing "adult standards, subject-matter, and methods" upon students remains the norm of educational policy and practice (pp. 18-19). It is indeed rare for students to have a voice in their schooling experiences or for their own interests, needs, and goals to drive the educational process (Cook-Sather, 2002; Fullan, 2001; Kirshner & Jefferson, 2015). What has evolved instead is a curriculum driven by externally imposed standards and a "one-size-fits-all" approach to teaching and learning. The standards-based reform movement of the past 30 years has contributed to even greater standardization of classroom conditions as states and national professional organizations have largely taken responsibility for defining "what students should know and be able to do in core subjects at critical points in their

formal schooling" (Spillane, 2004, pp. 9-10). The high-stakes testing associated with standards-based reform has led to a narrowing of both curriculum and instructional practices used in schools, exacerbating the imposition of particular subject matter and teaching methods on students (Au, 2007; Deci & Ryan, 2002). Even in the absence of federal, state, and district mandates, many educators believe there is inherent value in certain subject matter and continue to teach that content year-after-year irrespective of the interests and needs of students in their classrooms. In these ways, the "traditional education" that Dewey described in *Experience and Education* has predominated formal schooling for the greater part of the past century as students' unique interests, needs, and goals have largely been subordinated to imposed standards, content, and instructional practices.

This relative disregard for students' interests, motivations, and aspirations within dominant approaches to schooling undermines, as Dewey predicted, students' learning and experiences in the classroom each day. Research using self-determination theory (SDT) has consistently shown that, when they are in classroom environments where teachers "bypass" their "inner motivational resources" (Reeve & Cheon, 2014) and use controlling instructional practices, students experience more controlled forms of motivation, which are associated with lower levels of engagement, learning, and psychological well-being compared to classrooms where they are afforded autonomy and opportunities for input on the learning environment (Cheon & Reeve, 2015; Grolnick & Ryan, 1987; Reeve, 2009; Ryan & Niemiec, 2009). As Reeve (2009) succinctly noted, "students relatively benefit when teachers support their autonomy but relatively suffer when teachers control their behavior" (p. 159). The problem, however, is that controlling

curricular and instructional practices remain the norm in many schools, particularly within the context of the standards-based reform movement. Studies show that the more pressure teachers feel to comply with curriculum mandates and performance standards, the less self-determined they feel toward teaching and the more controlling instructional approaches they use with their students (Deci & Ryan, 2002; Pelletier, Séguin-Lévesque, & Legault, 2002; Roth, Assor, Kanat-Maymon, & Kaplan, 2007).

Large-scale surveys of secondary school students also offer some insight into how the relative disregard for youths' interests, needs, and motivations undermines their learning and experiences in school. Of the 81,499 students across the United States who took the 2006 High School Survey of Student Engagement (HSSSE), 67% reported being bored in school at least every day, with 17% suggesting they were bored in every class. When asked why they were bored in class, 75% of students responded that the material was not interesting to them while 39% reported that they did not find the material to be relevant to their lives. Only 34% of respondents suggested they attended school each day because they enjoyed it (Yazzie-Mintz, 2007). More recently, results from the Quaglia Institute for School Voice and Aspirations' (2016) *School Voice Report* revealed similar patterns to those found in the 2006 HSSSE. Of the 48,185 students in grades 6-12 who took the survey, 49% suggested they enjoyed being at school with 43% claiming that "school is boring" (p. 30). These reports of "ennui and boredom," as Dewey (1938) would call them, indicate that many schools are not accounting for students' motivations, needs, and aspirations as they are generally disinterested in the material they are taught and perceive it to have little relevance to their personal lives (p. 27).

The feelings of disengagement and disinterest reported in the HSSSE and *School Voice Report* contribute to the dropout problem in the U.S. whereby more than one million students make the decision to exit their formal schooling each year (National Center for Education Statistics [NCES], 2013). Dropping out of school is understood to be "the last step in a long process through which [students] have become disengaged from school" (Wang & Fredricks, 2014, p. 722). Indeed, research (e.g., Gillet, Vallerand, & Lafrenière, 2012; Lepper, Corpus, & Iyengar, 2005; Wigfield & Cambria, 2010) has found that students' motivation and engagement in school steadily decline as they progress through their formal education, perhaps lending some credence to Dewey's (1938) theory that the accumulation of "mis-educative" experiences leads students to develop "slack and careless attitude[s]" toward school (p. 26). As of 2012, over 2.5 million people (or about 6.5 percent of individuals) in the U.S. between the ages of 16 and 24 were not enrolled in school and had not completed a high school program (NCES, 2013). This collection of research suggests many schools are not providing the types of learning environments in which students with diverse backgrounds, interests, motivations, and aspirations can thrive and maximize their learning potential.

The Push for Personalization

In response to the aforementioned trends, policymakers, school leaders, and educators across the U.S. are attempting to move students' motivations, needs, and capacities from the periphery to the center of the schooling process. One approach that is growing in popularity is the development of personalized learning environments (PLEs) in which students' unique interests, needs, and goals are used to make key educational decisions and to drive the schooling process. The U.S. Department of Education (DOE)

made PLEs its first "Absolute Priority" (U.S. DOE, 2013, p. 6) in its Race to the Top-District competition and awarded $510 million to 21 school districts between 2012 and 2013 that demonstrated an ability to create more personalized school settings (Sykes, Decker, Verbrugge, & Ryan, 2014). Individual school districts are also making efforts to provide students more personalized educational experiences with the support of philanthropic and non-profit organizations such as the Bill & Melinda Gates Foundation and Next Generation Learning Challenges (Education Cities, 2014). In Colorado, for example, Denver Public Schools (DPS) and Colorado Springs District 11 are piloting personalized learning programs within select schools to inform larger district initiatives to expand student access to personalized learning. DPS intends to have 75% of its students in "personalized learning schools" by the end of 2022 and 100% of students in these schools by the 2024-25 school year (Education Cities, 2014, p. 13). Personalized learning initiatives are also being piloted in major U.S. cities such as New Orleans, Washington, D.C., and Dallas in hopes of using these programs to inform and drive district-wide reform efforts (Education Cities, 2014).

Vermont is at the forefront of the push for personalization at the state level with the recent passing of the Flexible Pathways Initiative (2013) and the Education Quality Standards (EQS). These initiatives aim to personalize students' schooling experiences by offering flexible pathways to advancement and graduation. The EQS open these flexible pathways by mandating that local school districts replace Carnegie Units with proficiency-based advancement and graduation requirements. By the 2019-20 school year, all students in Vermont will advance and graduate based on demonstrated mastery of locally-developed proficiencies rather than the amount of time they spend in the

classroom (Vermont State Board of Education, 2014). Within this proficiency-based assessment system, students can theoretically work toward mastery of these knowledge and skills through any combination of educational experiences (in traditional classroom settings and/or outside school) that are best suited to their individual interests, needs, and aspirations as learners. A student could, for example, demonstrate proficiency in scientific inquiry by creating a portfolio or exhibition of her work with a local engineering firm that meets pre-defined district standards.

The Flexible Pathways Initiative (2013) provides legislative backing to the personalization called for in the EQS by requiring that all students in grades 7-12 have a personalized learning plan (PLP) by the 2017-18 school year. PLPs are intended to document the ongoing planning processes in which students engage with school staff and their parents or legal guardians to identify their evolving interests, abilities, aspirations, and "high-quality educational experiences" that enable them to attain their goals (Flexible Pathways Initiative, 2013, p. 2). These PLPs are the primary mechanism students will use to design their own personalized pathways to high school graduation through various combinations of traditional coursework, online, work-based, and service-learning, dual enrollment, and early college. The Vermont Agency of Education (AOE, n.d.) has suggested "there may be as many unique pathways [to graduation] as there are students" and that "the components that make up each pathway are limited only by our imaginations and the resources available" (p. 2). The AOE (n.d.) also indicated that the Flexible Pathways Initiative moves Vermont's "public education system to a model based on personalization" (p. 5). In this way, state policy in Vermont is aiming to make the

educational process more responsive to students' individual motivations, purposes, and needs as learners.

Research Problem

Although personalization aims to create learning environments that are responsive to students' individual motivations, purposes, and needs, little empirical research has documented how students experience this approach in practice. Given this dearth of research, the extent to which personalized learning offers students a different quality of experience from more traditional approaches to education remains relatively unknown. It could be the case, for example, that students experience personalized learning to be equally as controlling as more traditional classroom settings. In this case, reforms rooted in personalization, upon which millions of dollars are being spent, would do little to disrupt the patterns of demotivation and disengagement among students described in previous sections. Additionally, personalized learning is a relatively nebulous concept that has been defined and put into practice in diverse ways. Some approaches to personalization may contribute to different qualities of experience for students in school while others may not. Further research is needed to understand how different facets of personalized learning relate to students' experiences with this approach.

Statement of Purpose

Given these gaps in the research literature, the purpose of this study was to explore students' experiences with personalized learning at three high schools in Vermont. More specifically, I used a pragmatic approach to qualitative research (Savin-Baden & Major, 2013) and self-determination theory (Ryan & Deci, 2000b) as a framework to examine these experiences. Self-determination theory (SDT) is a macro-

theory of motivation and human development, which posits that individuals demonstrate optimal functioning (e.g., motivation, engagement, performance, and learning) when their basic psychological needs for autonomy, competence, and relatedness are met (Ryan & Deci, 2000b). It offers a "psychological level of analysis" to examine how "social contexts affect people's *experience* and, moreover, their satisfaction of some very basic psychological needs" (Ryan & Niemiec, 2009, p. 265). SDT was used in this study to better understand the extent to which personalized learning supported students' basic psychological needs of autonomy, competence, and relatedness and contributed to their feelings of motivation and well-being in school. The goal of investigating these constructs was to obtain preliminary insight on the quality of students' experiences with personalized learning.

A secondary aim of the study was to identify the features of personalized learning that supported and undermined students' basic psychological needs and feelings of intrinsic motivation and well-being. A broad range of educational approaches and pedagogies have been labeled as "personalized learning" in the literature, but little research has explored how specific practices and structures, individually and in tandem with others, factor into the quality of students' experiences. Some structures and practices may contribute to a different quality of experience for students compared with more traditional classroom settings while others may not. Therefore, a goal of this study was to better understand the aspects of personalized learning that supported and diminished students' basic psychological needs, intrinsic motivation, and well-being.

A final goal of this study was to illuminate students' perspectives on educational practices that have been encouraged by new policy initiatives in the state of Vermont.

Because the success of reform efforts depends on the participation and buy-in of everyone involved in the educational process, including students, it is imperative to understand youths' perspectives on personalized learning (Corbett & Wilson 1995; Levin, 2000). This study was grounded in the belief that "Young people themselves are powerful and insightful analysts of what works and what does not work for them in school and the conditions that need to be brought into existence for them to have a meaningful education" (Smyth, 2007, p. 635). Through interviews with high school students, this study aimed to understand the facets of personalized learning that "worked" for youth and contributed to a meaningful education and those that undermined the quality of their experience and learning. Such insights are important for educators, school administrators, and policymakers as they consider whether and how to adopt more personalized approaches to education.

Research Questions

Given the aims outlined in the previous section, this study was guided by the following research questions:

1. How do students perceive their autonomy, competence, and relatedness within the context of personalized learning?
2. How do students describe their feelings of motivation and personal well-being within the context of personalized learning?

Definition of Key Terms

Personalized learning (or personalization). A student-centered approach to education that alters traditional relationships between students, teachers, and knowledge in the learning process. Personalized learning is student-driven in that it emerges from the

individual interests, motivations, aspirations, and needs of students. It forges partnership between students and teachers (or advisors) as they collaboratively develop plans for learners to work toward mutually agreed upon goals and become co-constructors of knowledge. It also accounts for students' social positioning and the broad spectrum of their human needs (e.g., social, emotional, psychological, physical, etc.) in the design of their educational plans. Personalized learning can work toward a variety of ends, but it positions the holistic development of each learner as one of its primary goals.

Personalized learning environment. A class or school initiative in which personalized learning is used as the primary educational approach.

Autonomy. "The psychological need to experience behavior as emanating from and as endorsed by the self; it is the inner endorsement of one's behavior (Deci & Ryan 1985a). Students experience autonomy need satisfaction to the extent to which their classroom activity affords them opportunities to engage in learning activities with an internal locus of causality, sense of psychological freedom, and perceived choice" (Reeve, 2012, p. 153).

Competence. "The need to be effective in one's pursuits and interactions with the environment. It reflects the inherent desire to exercise one's capacities and, in doing so, to seek out and master environmental challenges" (Reeve, 2012, p. 154).

Relatedness. "The need to establish close emotional bonds and secure attachments with others. It reflects the desire to be emotionally connected to and interpersonally involved in warm, caring and responsive relationships" (Reeve, 2012, p. 154).

Intrinsic Motivation. “Doing an activity for its inherent satisfactions rather than for some separable consequence” (Ryan & Deci, 2000a, p. 56); “the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to explore, and to learn” (Ryan & Deci, 2000b, p. 70).

Extrinsic Motivation. “Doing something because it leads to a separable outcome” (Ryan & Deci, 2000a, p. 55); feeling “externally compelled into action” (Ryan & Deci, 2000a, p. 55).

Chapter 2: Literature Review

Chapter Overview

Although the term "personalized learning" has gained currency during the past fifteen years, the idea of building the educational process around individual learners can be traced back to the writings of Jean-Jacques Rousseau and has been taken up by many progressive and humanistic educators from John Dewey and Maria Montessori to Dennis Littky and Eliot Washor (Zmuda, Curtis, & Ullman, 2015). In this way, the concept and practice of personalized learning are far from novel. Personalized learning has, however, been defined and operationalized in diverse ways in the field of education. These distinct conceptions and applications of the term are undergirded by disparate goals, values, and assumptions about learners, learning, and the nature of knowledge. Despite this conceptual diversity, little effort has been made in the scant body of empirical research on personalized learning to distinguish among the different types and philosophies of personalization that have been studied. Therefore, the body of empirical research on personalized learning is relatively fragmented.

Because empirical research on personalized learning remains limited, particularly as it pertains to the student experience, I spend much of this literature review exploring the history of personalized learning in theory and practice. In the first section of this chapter, I offer historical context for this study's conception of personalized learning by locating it within the humanistic tradition of education and exploring its roots in the educational philosophies of Jean-Jacques Rousseau and John Dewey. I also provide a brief review of the predecessors of personalized learning in practice, including Montessori education, the Dalton Plan, open education, and Big Picture Learning. In the

next section of the chapter, I consider the various ways personalized learning has been defined and conceptualized in the literature to situate this study within the broader theorizing on this educational approach. I then review the limited body of empirical research on personalized learning to illustrate what is known about this approach in practice and how the present study will contribute to this literature. I close the chapter with an overview of self-determination theory, the theoretical framework that guided this study.

Historical Perspectives on Personalized Learning

In many ways, personalized learning represents the most recent manifestation of the humanistic paradigm in education (DeCarvalho, 1991). Humanist perspectives on education can be traced as far back as the philosophical writings of Immanuel Kant and Jean-Jacques Rousseau and serve as the basis for many progressive theories of and movements in education (Chatelier, 2015). Although there are various types of humanistic education (Chatelier, 2015), the educational philosophy is largely concerned with self-actualization of the individual and the development of learners' innate capacities (DeCarvalho, 1991; Koopman, 1987). The individual takes on central importance within humanistic education. Whereas more traditional forms of education prioritize subject matter, teaching methods, and academic achievement, humanism places learners' interests, motivations, and aspirations at the center of the educational process and sees the holistic development of the individual as one of its primary goals (Chatelier, 2015; Koopman, 1987). This section aims to further contextualize personalized learning within the humanistic educational tradition by exploring its philosophical roots and

considering some of the humanistic educational approaches that preceded current practices of personalized learning.

Jean-Jacques Rousseau. The philosophy of personalized learning can be traced back to the educational writings of Jean-Jacques Rousseau (Zmuda, Curtis, & Ullman, 2015). Numerous scholars have asserted that Rousseau's educational writings serve as the basis for the humanistic and progressive movements in education of which personalized learning is understood to be a part (Chatelier, 2015; Mintz, 2012). Rousseau's perspectives were representative of the naturalistic-romantic tradition within humanistic education that assumes there is a "fixed self" that is "essentially good and unique to the individual, and drives to actualise and fulfill itself" (Aloni, 2002, p. 42; Chatelier, 2015). Much of Rousseau's writing about education was indeed based on the assumption that each individual has a natural way of being that is "formed from Nature" (Peckover, 2012, p. 85). Rousseau believed that all humans were born good, and therefore "education should accept the individual's nature as given" (Gilead, 2005, p. 437).

Rousseau also argued that all human beings were born happy and that the goal of education should be to maintain that state of well-being (Gilead, 2012). For Rousseau, happiness involved more than an individual's experience of pleasure (Mintz, 2012). Rather, happiness was achieved through self-realization of one's true nature (Peckover, 2012). According to Gilead (2012), Rousseau argued that "happiness stems from internal balance in the soul, from the unity of the self, and from the satisfaction that one receives by achieving all that one values" (p. 271). Rousseau believed, however, that traditional approaches to education interfered with individuals' happiness because they imposed external standards and ways of being, which "separated" children from their "own

creative urges" and served as "a wedge between the student and his or her self-realization" (Peckover, 2012, p. 87-88). Given this disruption, Rousseau argued that education should account for students' interests and allow them the freedom to explore their inherent curiosities and desires (Gilead, 2005; Peckover, 2012).

While there are many warranted critiques of Rousseau's ideas, his perspectives initiated a focus on the individual within the educational process that would be taken up by educators and philosophers in the following centuries. Rousseau's belief in self-realization as education's primary goal is present in many humanistic and progressive philosophies of education, including some approaches to personalized learning. The same can be said for Rousseau's attention to the individual interests and motivations of learners as well as his advocacy for giving students freedom to explore their intrinsic curiosities and desires through their education. In many ways, Rousseau's ideas laid the groundwork for the educational perspectives and approaches explored in the remainder of this section.

John Dewey. Considered by some to be "the greatest educational theorist of the modern era," John Dewey took up many of Rousseau's ideas about the importance of individuals' internal characteristics in the learning process in his own educational theorizing (Chatelier, 2015, p. 86). Unlike Rousseau, however, Dewey did not believe that human nature was "a fixed entity waiting for release" (Brick, 2008, p. 123). Instead, he maintained that individuals' "native activities" develop through interaction with their social and physical environments (Dewey, 1916, p. 133; Brick, 2008). In describing the view of human nature that informed Dewey's educational theories, Curti (1980) explained, "Being the product of ongoing human contacts and experiences, the motives

making up human nature were neither a 'given' nor an 'end' product. Human nature was a function of ever-changing social conditions and needs" (p. 250).

Given this view of human nature, the environments in which learning occurred took on added importance in Dewey's philosophies of education. According to Dewey (1895), "The ultimate problem of all education is to coordinate the psychological and social factors" (p. 224). He maintained that it was the educator's responsibility to create an environment that fostered individuals' "power to join freely and fully in shared or common activities" (Dewey, 1916, p. 144) and developed their capacities for "mutual accommodation and adaptation" (Dewey, 1938, p. 60). In creating these environments, Dewey (1916) believed that educators should account for individuals' intrinsic qualities and characteristics because they "furnish the *conditions* of all teaching" (p. 133). As he asserted in *Democracy and Education*, "To take into account the contribution made by the existing instincts and habits of those directed is to direct them economically and wisely" (Dewey, 1916, p. 31).

Dewey's interest in accounting for the motivations and capacities of individual learners was informed by some of his basic beliefs and assumptions about human nature. One belief he held about humans was that "In the strict sense, nothing can be forced upon or into them. To overlook this fact means to distort and pervert human nature" (Dewey, 1916, p. 31). Dewey (1916) used an example of a burglar to suggest that "a man can be prevented from breaking into other persons' houses by shutting him up, but shutting him up may not alter his disposition to commit burglary" (p. 32). Given this assumption, Dewey believed it was critical to understand the dispositions and motivations already at work within individuals in any educational situation and to create environments that

helped channel them toward desired ends. As Dewey (1916) put it, "all direction is but *re*-direction; it shifts the activities already going on into another channel. Unless one is cognizant of the energies which are already in operation, one's attempts at direction will almost surely go amiss" (p. 31).

Dewey's educational theories and philosophies in many ways serve as the foundation for contemporary humanistic approaches to personalized learning. He viewed the educational process as a collaboration between teachers and students that was responsive to the motivations, needs, and capacities of learners. He believed that learners' "natural impulses and desires" should serve as the "starting point" for educational episodes but also maintained that educators had a responsibility to draw on their own knowledge and experience in the world to ensure activities were educative and promoted future growth (Dewey, 1938, p. 64). While Dewey viewed individual and social development as broad goals for education, he also believed the process of developing the aims of educational experiences should be a "co-operative enterprise, not a dictation. The teacher's suggestion is not a mold for a cast-iron result but is a starting point to be developed into a plan through contributions from the experience of all engaged in the learning process" (Dewey, 1938, p. 72). With his attention to the individual motivations, dispositions, and aspirations of learners, focus on personal and social development as primary aims of the educational process, and emphasis on education as a collaborative enterprise between teachers and students, Dewey's perspectives offer philosophical and practical foundations for humanistic approaches to personalized learning.

Maria Montessori and Montessori education. A contemporary of Dewey, Maria Montessori also played a significant role in the advancement of more humanistic

and personalized approaches to education. Montessori's educational philosophy grew out of her work with special needs children as a doctor in Rome, Italy (Thayer-Bacon, 2012). Montessori's ideas and practices first gained notoriety in 1900 when several students with special needs who participated in her educational program "learned how to read and write and were able to pass the state examinations with above average scores" (Thayer-Bacon, 2012, p. 6). This success led Montessori to pursue further study in education and open her own school, "Casa dei Bambini" (The Children's Home), in 1907 where she further refined her philosophy and methods of education (Thayer-Bacon, 2012; Whitescarver & Cossentino, 2008). In this school, students were allowed move freely throughout the learning environment and choose the types of activities and materials with which they engaged. Montessori instructed the teacher of the school to refrain from directing students' activities and instead observe their interests, interactions with classmates, and the materials that attracted them (Thayer-Bacon, 2012; Whitescarver & Cossentino, 2008). Within a year of opening Casa dei Bambini, Montessori was "world famous, 'for having discovered the world within the child,'" and she began the work of spreading her philosophy and practice through writing and training teachers in her methods (Thayer-Bacon, 2012, p. 7). By 1913, there were close to 100 Montessori schools in the United States (Thayer-Bacon, 2012), and there are now more than 20,000 Montessori schools across the world (Whitescarver & Cossentino, 2008).

The Montessori method is most often associated with early childhood and elementary education, but its principles have also been applied at the middle and high school levels (Rathunde & Csikszentmihalyi, 2005a; Shernoff, 2013). Rathunde (2014) suggested Montessori education has nine principles that are common across grade levels:

1) freedom of choice, 2) eliminating grades, 3) learning by doing, 4) deep concentration, 5) prepared environments, 6) habits of self-regulation, 7) movement, 8) aesthetic order, and 9) the importance of nature. Interest is another central feature of Montessori education as teachers are expected to keenly observe the materials and content to which students are attracted and encourage them to pursue those interests through independent projects and investigations (Rathunde, 2014; Shernoff, 2013). Indeed, most Montessori schools offer students extended periods of time during the day to work on projects of choice that are often related to their personal interests (Rathunde, 2014). Given its focus on freedom of choice, learning by doing, self-regulation, and student interest, Montessori education itself can be classified as a particular model of personalized learning.

The principles and beliefs underlying Montessori education also help locate it as one of the earliest models of humanistic personalized learning. Like many humanists before (and after) her, Montessori believed that children, rather than being "helpless" and empty vessels waiting to be filled with adult knowledge, are "endowed with great creative energies, which are of their nature so fragile as to need a loving and intelligent defense" (Montessori, 1949/1988, p. 26). Therefore, Montessori maintained that education should create conditions that set children's creative energies free, which ultimately involved putting students at the center of the learning process (Shernoff, 2013). For Montessori, a primary goal of education was to help students feel "capable of succeeding in life by his own merits and on his own merits" (Montessori, 1973, p. 103). Although her ideas echo the perspectives of many educational theorists and philosophers who preceded her, Montessori's work is significant because she was the first to

"elaborate a comprehensive, child-centered, developmentalist philosophy in a concrete pedagogical method" (Whitescarver & Cossentino, 2008, p. 2574).

The Dalton Plan. Traces of personalized learning also can be found in the Dalton Laboratory Plan, which was originally developed by Helen Parkhurst and most notably implemented at a high school in Dalton, Massachusetts in 1921 (Edwards, 1991). Parkhurst (1922) believed that traditional educational methods effectively suppressed students' natural curiosity and independence and therefore sought to develop an alternative approach that represented "the entire reorganization of school life" (p. 13). This work began in her own classroom as a teacher and continued as she refined and formalized the plan between 1911 and 1919 (Parkhurst, 1922). Although it was intended to significantly alter traditional structures and arrangements within schools, Parkhurst did not want the Dalton Plan to serve as a standardized set of practices that all schools followed in the same way. Instead, she believed the Dalton Plan should be adapted and modified to fit the local contexts in which it was applied (Parkhurst, 1922).

In practice, the Dalton Plan was built around discipline-specific "laboratories" rather than traditional academic classes. These laboratories were staffed by teachers who specialized in particular content areas and posted the assignments and content that students were expected to complete on monthly bulletins (Jackman, 1920). Students agreed to complete the month's work by signing contracts with their teachers and tracked their progress on graphs that allowed them to see how many weeks of work they had completed toward their monthly totals (Edwards, 1991; Parkhurst, 1922). Teachers were primarily responsible for working with individuals and small groups of students to help them understand the scope of the work they were expected to complete within a given

amount of time (Parkhurst, 1922). Students were free to work through the material at their own pace and could decide where they wanted to spend their time during the day (Jackman, 1920). If a student completed all of their assignments for each subject area before the end of the month, they were permitted to move onto the next month's compilation of work (Parkhurst, 1922). Parkhurst (1922) asserted that these laboratories were intended to be places where "the children experiment—where they are free to work on their jobs, not places where they are experimented upon" (p. 39).

Parkhurst's (1922) *Education on the Dalton Plan* outlined the two basic principles that undergirded her educational methods. The first principle of the Dalton Plan was freedom. Parkhurst asserted that students should be free to continue working on a subject in which they were deeply engaged "without interruption" because she believed students were "mentally keener, more alert, and more capable of mastering any difficulty that may arise" when they were interested in the topic at hand (p. 19). This principle of freedom also extended to students' ability to work through material at their own pace and approach their studies as they best saw fit. Parkhurst (1922) believed that giving students freedom and responsibility for their own learning fostered their powers of independence, self-sufficiency, and judgment. The second principle of the Dalton Plan was cooperation or what Parkhurst termed "the interaction of group life" (p. 19). Parkhurst believed that schools should reflect the broader democratic society in which they were situated by creating arrangements that promote social functioning through "intimate relations" and "interdependence" (p. 20).

In addition to these principles, *Education on the Dalton Plan* offered insight into Parkhurst's humanistic beliefs about learners and learning. Like John Dewey and other

humanistic educators, Parkhurst believed a fundamental shortcoming of traditional schooling was its effective suppression of individuals' innate curiosities and desires. Parkhurst maintained that ignorance of learners' motivations and aspirations created many problems between students and teachers in traditional classroom settings. Therefore, Parkhurst (1922) believed that education should "try to reach and release the deep well of [students'] natural powers. In doing so we shall assist and encourage the expression of [their] life-force and harness it to the work of education" (p. 28). Evident within this statement is Parkhurst's conviction that education should work to foster students' inner motivational resources and promote their self-actualization. These underlying beliefs, along with the freedom it provided students to organize and direct their own learning, help locate the Dalton Plan as a predecessor to more contemporary approaches to personalized learning.

Open education. Personalized learning also shares many characteristics with the "open education" movement (also known as "informal education") that swept through the United States and Great Britain in the 1960s and 1970s (Silberman, 1973). Open education originated in British public elementary schools after World War II and grew in popularity when a parliamentary commission published a report in 1967, which advocated adoption of open education in all British schools (Cuban, 2004). This publication, commonly known as the Plowden Report, influenced many American educators who visited British schools during the 1960s (Cuban, 2004) as it offered "the most thorough and important presentation of the ideas and practices of open education to date" (Barth, 1969, p. 29). Many educators viewed open education as an effective response to the critiques leveled against the American school system during the 1950s

and 1960s (Cuban, 2004). By the 1970s, this approach to schooling became quite common as open education programs and open classrooms were developed across the United States (Cuban, 2004).

Open education represented a shift away from traditional classroom arrangements with the teacher positioned at the front of the classroom and students seated in rows as passive recipients of knowledge. In its place, open education was built around "interest centers" and discipline-specific workshops where students engaged with a variety of books and physical materials such as scales, yardsticks, clocks, and shells (Silberman, 1973). Students learned at their own pace in these interest centers with the support of a teacher who structured classroom activities for individuals and small groups of students. (Cuban, 2004). Teachers served mainly as guides rather than directors of student's activities in these settings as they "helped students negotiate each of the reading, math, science, art, and other interest centers on the principle that children learn best when they are interested and see the importance of what they are doing" (Cuban, 2004, p. 70; Rathbone, 1971). Although open education was most prevalent at the elementary level, some high schools created alternative open education programs where students had the opportunity to direct their own learning, pursue learning opportunities in their surrounding communities, and learn through their personal and intellectual interests (Cuban, 2004; Silberman, 1973).

As with personalized learning, early advocates of open education asserted it was not a model or particular set of techniques to be "slavishly imitated or followed" (Silberman, 1973, p. xix). Instead, it represented a set of beliefs and convictions about the nature of human beings, childhood, adolescence, and learning itself. Many of these

beliefs and assumptions are similar to those that undergird contemporary reforms related to personalized learning. Open educators believed, for example, that students were "active agent[s] in [their] own learning process" rather than "passive vessel[s] waiting to be filled" or "amorphous lump[s] of clay awaiting some form-giving artist" (Rathbone, 1971, p. 100). Similarly, open educators operated under the assumption that students were naturally curious and had inherent motivational resources that would drive them toward exploration if they remained unthreatened. For some open educators, these beliefs implied they should adopt a "don't meddle role" in their work with students (Barth, 1969, p. 3). Others grappled with what the appropriate role of a teacher in an open classroom should be. Regardless of what role they believed teachers should play, open educators maintained students had the right to make important decisions about their own learning and should be involved in the planning of their education (Barth, 1969). These same beliefs underlie many of the recent personalized learning initiatives within the humanistic tradition of education.

Big Picture Learning. One of the most well-known contemporary models of personalization is the Big Picture approach, which originated at the Metropolitan Regional Career and Technical Center (The Met) in Providence, Rhode Island in 1996 and has since expanded to a network of over 60 Big Picture Learning (BPL) schools across the United States (Alger, 2016; Levine, 2002). After decades of work as teachers and administrators, Elliot Washor and Dennis Littky had an opportunity, through their involvement with the Annenberg Institute for School Reform at Brown University, to design their own school that "turned the traditional arrangement on its head" (Littky & Grabelle, 2004, p. 285; Levine, 2002). Given relative autonomy in this task, Littky and

Washor pretended to know nothing about the traditional organization of schools (e.g., grades, subjects, classes, etc.) and asked themselves what kinds of environments and structures would best support learning for each student in their school (Littky & Grabelle, 2004).

The result of this work was the Big Picture model, which aims to educate "one student at a time" by involving youth, their family members, and teachers in the process of developing a personalized learning program for each student in their schools (Littky & Grabelle, 2004). Rather than attending traditional classes, students at BPL schools spend three days per week in advisories working on projects related to their personal interests and the other two days of the week learning through real-world experiences in community-based internships that are often linked to their career interests. Students spend the entire four years of high school in their advisories with approximately 14 other students and the same advisor to help foster close personal and academic connections (Levine, 2002). Traditional "subjects" do not exist in BPL schools (Littky & Grabelle, 2004). Instead, students use their interest-based projects and internships to work toward five learning goals: 1) communication, 2) social reasoning, 3) empirical reasoning, 4) quantitative reasoning, and 5) personal qualities. Students are assessed on their progress toward these goals through exhibitions of learning four times each year (Klein, 2008).

The Big Picture model is informed by a number of beliefs about learners and learning. At the core of its approach to education is the belief that "true learning" happens when students are "active participants in their education, when their course of study is personalized by teachers, parents, and mentors who know them well, and when school-based learning is blended with outside experiences that heighten student interest" (Littky

& Grabelle, 2004, p. 285). The individual is placed at the center of the learning process in the Big Picture model as is evidenced by its mantra of educating "one student at a time" and practice of developing personalized programs of study for each student (Littky & Grabelle, 2004, p. 285). Big Picture's belief in fostering individuals' innate curiosities and inner motivational resources is manifest in its practice of involving students in the educational planning process and encouraging them to learn through their personal interests and curiosities. One of the Big Picture model's primary goals is to help students become lifelong learners, and BPL schools believe that "using interests as the starting point for learning is the best way to achieve that goal" (Levine, 2002, p. 29).

The Big Picture model has been associated with a host of positive outcomes for its students, who are primarily urban youth of color from low-income communities and historically underserved by traditional schooling (Washor, Arnold, & Mojkowski, 2008). The first class at the Met had a high school graduation rate of 96% and college acceptance rate of 98% (Arnold, Soto, Wartman, Methven, & Brown, 2015), and as of 2008, schools in the Big Picture network had a 92% graduation rate with 95% of graduates being accepted into college (Washor, Arnold, & Mojkowski, 2008). The Big Picture Longitudinal Study (BPLS) offered more recent evidence of the Big Picture model's relative success (Arnold et al., 2015). The BPLS suggested that across all Big Picture schools, 93% of the class of 2006 and 97% of the class of 2007 enrolled at a two-year or four-year college at some point since graduating high school. Sixty-nine percent of students from the classes of 2006-2011 entered college immediately upon high school graduation, which compares favorably to the national rate of 53% of students from the

lowest income quartile who enrolled in college the fall after graduating from high school (Arnold et al., 2015).

In many ways, BPL is one of the most well-established and well-developed contemporary models of personalized learning to date with a network of more than 120 schools in the United States and abroad (Alger, 2016). Many of its core features such as personalized learning plans, advisory systems, and learning through internships have been adopted in public schools' recent efforts to provide students with more personalized learning experiences. These features have often been adopted in a piecemeal fashion, however, and implemented in schools with varying definitions of personalized learning and diverse beliefs about the ends personalization should serve. Given this variety, the following section will explore the different ways that personalized learning has been defined and conceptualized in the literature since 2004.

Current Definitions and Conceptions of Personalized Learning

Although personalized learning has grown increasingly popular in educational discourse and practice in recent years, there is a lack of clarity about what personalization learning is or entails in practice (Fielding, 2006). As Pykett (2009) noted, "it can be shown how personalization means different things to different people *at the same time*" (p. 378). Campbell, Robinson, Neelands, Hewston, and Mazzoli (2007) illustrated, for example, the diverse ways that personalized learning has been conceptualized and defined in policy documents in the United Kingdom (U.K.). Given these varying conceptions, it is important to consider how personalized learning has been defined in the literature to situate this study's conception of personalization within the broad spectrum of practices and philosophies to which the term has been assigned. In this section, I

explore the different ways that personalized learning has been defined and conceptualized in both policy documents and scholarly literature in the United States (U.S.) and U.K.

Technology-based personalization. One particular body of literature (e.g., Chen, 2008; Lin, Yeh, Hung, & Chang, 2013) uses "personalized learning" to connote primarily web-based learning systems that adapt curriculum sequencing, pacing, and presentation to the unique backgrounds, knowledge, preferences, interests, and learning goals of each student. Within this conception of the term, learning occurs primarily through engagement with digital programs as opposed to interactions with teachers and classmates toward particular learning goals. The role of the teacher is significantly reduced within this model of personalized learning as computer programs take on most of the responsibility for delivering the curriculum and tailoring instruction to individual students' preferences and needs.

Teacher-directed personalization. Other definitions and applications of the term broaden personalization beyond the use of technology to meet students' diverse needs in the classroom. Some share many similarities with more traditional classroom approaches but assert learning is not personalized unless the teacher tailors curriculum and instruction to the unique interests, preferences, and needs of each student. For example, The U.S. Department of Education (2010) defined personalized learning in its *National Education Technology Plan 2010* as "instruction that is paced to learning needs, tailored to learning preferences, and tailored to the specific interests of different learners" (p. 12). With this and similar definitions of personalized learning, teachers remain largely in control of the educational process. They use their knowledge of students' interests and needs to determine the pace, style, and content of curriculum for each student.

Student-directed personalization. Clarke (2013) asserts, however, that these types of teacher-directed approaches should be defined as individualization and not personalization. For Clarke, personalization involves students taking increased control of and responsibility for their learning whereas individualization occurs when teachers or computer programs tailor curriculum and instruction to students. As he puts it, "The difference between individualization and personalization lies in control. We can individualize education by imposing it, but students choose to personalize their own learning. Their volition drives their inquiry" (Clarke, 2013, pp. 6-7). Based on this definition, learning is only personalized when students are actively involved in determining what they learn, how they develop new knowledge and skills, and how they demonstrate their new proficiencies. This definition suggests many practices and approaches currently labeled as "personalized" should in fact be described as "individualized" because the teacher maintains control of curricular and instructional decisions for students.

Stages of personalization. Bray and McClaskey (2015) offer a definition of personalization that is similar to Clarke's, but they assert there are different "stages" of personalized learning. Stage One is primarily teacher-directed and shares many similarities with Clarke's (2013) conception of individualization. The primary difference is that teachers design projects and activities in ways that allow for learner voice and choice, which introduces some degree of student control into the learning environment. In Stage Two, students begin to take on increased responsibility for their learning and "co-design" learning experiences with teachers by determining how they best access and engage with new content, choosing the tools and strategies that are suited to their needs,

creating assessments, and identifying extended learning opportunities that match their interests and aspirations (p. 77). Stage Three is "learner-driven" as students are fully self-directed and design their own learning experiences both within and outside the traditional classroom setting, create their own assessments, demonstrate their learning through public showcases and exhibitions of their work, and learn at their own pace in a competency-based system of assessment (p. 77). Bray and McClaskey's classification scheme is useful for distinguishing among different kinds and degrees of personalization.

Deep vs. shallow personalization. Campbell et al. (2007) make similar distinctions between "deep" and "shallow" personalization in their assessment of the U.K.'s movement toward personalized learning.[1] Their conception of shallow personalization again shares many similarities with Clarke's (2013) definition of individualization in that it involves teachers tailoring the curriculum and instruction to the students in their classrooms. For Campbell et al. (2007), shallow personalization attempts to make educational services more "streamlined, accessible, and efficient" but does not shift the relationship between teachers and students in a way that they become "co-producers of educational knowledge" (p. 144). Deep personalization, on the other hand, is "disruptive" because it requires "changed power relations over knowledge production" (p. 145). With deep personalization, teachers and students become partners in the learning process, and students are actively involved in making decisions about what, where, and how they learn. Students become co-producers and "co-authors of their

[1] Campbell et al.'s (2007) analysis builds on and expands the work of Leadbeater (2004) who first introduced the distinction between "deep" and "shallow" personalization.

educational script[s]" rather than passive recipients of educational services in a deeply personalized setting (p. 138).

Process vs. outcome personalization. While Campbell et al. (2007) distinguish between "deep" and "shallow personalization, Zhao (2016) differentiates between "process" and "outcome" personalization (p. 9). For Zhao, process personalization entails customizing aspects of the learning process such as pace, content, products, and learning environments for each student. It allows students to work at their own pace, choose where and how they learn, and determine how they demonstrate new knowledge and skills. With process personalization, all students to work toward mastery of the same established set of standards. Outcome personalization, on the other hand, allows students to determine the objectives of their educational experiences. With outcome personalization, students are not required to follow a prescribed curriculum or meet a common set of standards. Instead, students work with teachers to develop unique educational programs toward their own goals that are based on their personal strengths and interests as learners.

Whole child personalization. David Hargreaves (2006) extends these conceptions by examining the conditions that must be present beyond the learning process itself for personalization to occur. Specially, he asserts "deep support" is required for students to engage in deep forms of personalized learning (p. 8). For Hargreaves, deep support involves assuring students' general wellbeing, "including their health, their general security and their freedom from poverty and disadvantage" (p. 8). He argues individual schools may not be able to provide this deep support alone and therefore suggests that schools aiming for personalization should collaborate with external institutions and agencies to better meet their students' needs. Hargreaves' (2006)

conception broadens the focus of personalization from a relatively narrow attention to teaching and learning to a focus on students' basic needs and well-being as individuals.

The Goals and Values of Personalized Learning

As the previous section demonstrated, there are varying conceptions and definitions of personalized learning in both scholarly literature and policy documents related to this educational approach. Underlying each of these conceptions are particular values and assumptions about students and the purposes of schooling. In this section, I consider varying perspectives on the values, goals, and assumptions that undergird different conceptions of personalized learning.

Economic rationales and individuals as consumers. Hartley (2009) argues that personalized learning is based in marketing theory rather than educational theory and that its rationale is ultimately economic. He asserts that personalized learning conceptualizes the individual as a "competitive entrepreneur" or "self-centred consumer" and that the rationale for personalization is "explicitly consumerist" (p. 429). Hartley acknowledges that personalization has democratic appeal with its goal of enabling all students to have a voice and fulfill their potential but argues that this voice must be expressed "in a certain way, about certain things, and in a 'new' middle-class manner that is seen as legitimate by would-be providers" (p. 430). In other words, students only have voice to the extent that it conforms to the standards and expectations of their schools, which Hartley argues are grounded in neo-liberal conceptions of the individual as a consumer and competitor. Therefore, from Hartley's perspective, "The 'voice' of personalisation is a would-be consumer's voice, not that of a citizen-in-the-making" (p. 430).

Such framing of students as consumers and competitive entrepreneurs can be found in the work of Hargreaves (2004) and Zhao (2016), two scholars who have been involved in the push for personalization. Hargreaves (2004) asserts "Personalisation may be treated as a version of what is called *customisation* in the business world" and compares personalized learning to the success Japanese automobile makers experienced by putting the needs and aspirations of the customer first (p. 2). Such a comparison of students and schools to car customers and the automobile industry aligns with Hartley's assertion that some conceptions of personalized learning are based in marketing theory and treat students as consumers rather than emerging citizens. Similarly, Zhao's (2016) rationale for personalized learning is that it prepares students to be entrepreneurs rather than employees in the rapidly changing 21st-century global economy. He asserts, "Personalization and student autonomy is one of the three elements of a world-class learning paradigm that is necessary for cultivating creative and entrepreneurial students" (p. 8). Zhao's argument for personalization is based entirely in economic logic and frames students strictly as future employees and entrepreneurs to the exclusion of their personal development and preparation for democratic citizenship.

Personalized learning and democracy. In contrast to these perspectives, Leadbeater (2004) adamantly rejects the notion that personalized learning applies market principles and ideas to education. He asserts that personalization "is not designed to turn children and parents into consumers of education. The aim is to promote personal development through self-realisation, self-enhancement and self-development" (Leadbeater, 2004, p. 70). He goes on to argue that personalized learning allows students and families to develop their own definitions of the goals and values of education and

affords them increased voice and decision-making power in determining how learners engage with their education. For Leadbeater (2004), personalized learning is a more democratic approach to schooling than the "one-size-fits-all" model because it empowers students and their families to become co-producers of a public good (i.e., their schooling) and encourages "bottom-up, mass social innovation, enabled by the state" (p. 16).

Personalized learning and equity. In addition to being framed as a more democratic approach to schooling, personalized learning has been presented as a vehicle for equity and social justice. Wolf (2010) argues, for example, that personalized learning has the potential to "dramatically redefine the very concept of equity" by moving away from a system in which all students are provided the same educational inputs toward a model in which they "have access to a unique learning experience (and resources) based upon their individual needs" (p. 9). For Wolf, personalized learning shifts from a focus on equality of educational inputs to equality of educational outcomes, which (at least in theory) allows for more equitable allocation of resources and learning opportunities based on student need. In a similar vein, the U.K.'s Department for Education and Skills (DfES, 2006) argues that "Personalisation is a matter of moral purpose and social justice" and points to large disparities in educational outcomes between students from "the most disadvantaged groups" and their more advantaged peers as a rationale for personalized approaches to education (p. 7). For DfES, personalized learning allows schools to better track students' progress and ensure that learners from the most disadvantaged backgrounds do not "fall behind" their peers (p. 37). Embedded within these conceptions of personalized learning and social justice is a belief in standardized learning outcomes

and progressions and an assumption that equity should be associated with equality of outcomes.

Critical perspectives on personalized learning. Pykett (2009) pushes back against such characterizations of both personalized learning and social justice. For Pykett, the assumption that students should attain particular levels of literacy and numeracy by specific ages all but ignores the social, political, cultural, and economic contexts in which learners grow and develop. Echoing Burman's (1994) analysis, Pykett (2009) argues that these assumptions serve to "de-politicize the regulation of 'normal' development milestones through national testing and measurement" (p. 389). Personalized learning toward these standardized ends, then, reinforces dominant conceptions of "normal" development and detracts from questions about how normal is "defined" and whose interests that definition serves. Pykett (2009) also worries about personalization's construction of the "learner as king" through its assumptions that students are autonomous, naturally curious, and self-motivated with a clear understanding of their own learning preferences and styles (p. 391). For Pykett, this framing of students as natural and self-actualizing learners "obscures our socialized or spatialized positioning as people" (p. 391) and effectively "serves to render these social and spatial inequalities a matter of psychology" (p. 392). In this way, some of the assumptions embedded within the theory and practice of more humanistic approaches to personalized learning "render[s] questions of social justice or fairness of policy agendas such as personalization as problems of a natural, psychological and moral nature rather than subject to political contestation and critical analysis" (Pykett, 2009, p. 393).

Personalized learning serving various aims. Fielding (2006) takes a step back from these debates about what personalized learning is and isn't to consider what personalization *can be*. From Fielding's perspective, personalized learning can be used both within "high performance learning organisations" and "person-centred learning communities" (p. 354). In the former type of school, the focus is on outcomes as measured by student attainment, and "The significance of both students and teachers is derivative and rests primarily in their contribution, usually via high stakes testing, to the public performance of the organization" (p. 357). In contrast, person-centred learning communities are committed to "wider human purposes" and "more exploratory modes of being and development" through "more participatory, less hierarchical forms of engagement and decision-making" (p. 360). According to Fielding, personalized learning does not inherently belong to either type of school. Rather, it can be adopted within these different kinds of schools to serve the purposes around which they are organized, namely high academic attainment or more holistic human development.

Given the dominant neo-liberal policy context and its emphasis on performativity (as evidenced in the U.S. by the standards-based and high-stakes accountability reform movements), Fielding (2006) suggests "personalization is set to become the forerunner of 21st century totalitarianism …. ushering in a new era of increasingly sophisticated, increasingly dubious forms of influence and control" (p. 366). He argues, however, that if the basic purposes and functions of education are considered and actively debated, personalized learning has "the capacity to explore and develop forms of engagement and ways of learning that contribute to a wider and deeper human flourishing than the present currently affords us" (p. 366). For Fielding, the power and potential of personalized

learning does not rest with the approach itself but with the ends toward which it works in schools. With the current ambiguities surrounding personalized learning in both theory and practice, "it is not clear whether personalization is a seductive rearticulation of corporate insinuation or a genuinely different orientation to what we do and how we might do it" (p. 356).

An Operational Definition of Personalized Learning

The distinctions offered in the previous section are important within the context of the present investigation because it is likely that different approaches to personalization contribute to disparate learning environments and experiences for students. For example, teacher-directed conceptions and practices of personalized learning offer less change to traditional relationships between students, teachers, and the curriculum than more student-centered approaches to personalization. These varied relationships are likely to contribute to different kinds of learning environments and experiences for students. The same can be said for the ends or aims personalized learning is intended to serve. It is expected that personalized learning in Fielding's (2006) "person-centred learning communities," which focus on the holistic development of individuals, would contribute to different kinds of experiences than personalization in "high performance learning organisations," which prioritize traditional measures of academic achievement. Given these potential differences in learning environments and student experiences associated with diverse conceptions and applications of personalized learning, it is important to explicate this study's definition personalization.

This study's definition of personalized learning aligns with the more student-centered and humanistic conceptions of the term outlined in the preceding sections.

Specifically, it draws on Clarke (2013) and Campbell et al.'s (2007) work in asserting that personalization alters traditional relationships between students, teachers, and knowledge in the learning process. Personalized learning is student-driven in that it emerges from their individual interests, motivations, aspirations, and needs. It forges partnership between students and teachers (or advisors) as they collaboratively develop plans for learners to work toward mutually agreed upon goals and become "co-producers of educational knowledge" (Campbell et al., 2007, p. 144). This definition also draws on Hargreaves (2006) and Pykett's (2009) work in maintaining that personalized learning accounts for individuals' social positioning and the broad spectrum of their human needs (e.g., social, emotional, psychological, physical, etc.) in the design of students' educational plans. The definition acknowledges, as Fielding (2006) explains, that personalized learning can work toward a variety of ends, but it positions the holistic development of each learner as one of its primary goals.

Empirical Research on Personalized Learning

Because personalized learning is a relatively recent development in the United States, empirical research on contemporary applications of the approach remains quite limited. Given, however, that Montessori education and Big Picture Learning share many characteristics with personalized learning (as defined in this study) and can be considered models of personalization in their own right, empirical research on these approaches can offer some insight into the student experience with personalized learning. Even after accounting for these approaches, however, there remains a relative dearth of research on students' experiences with personalization. This section begins by reviewing empirical research on contemporary applications of personalized learning and then considers some

studies on Montessori education and Big Picture Learning that are pertinent to the present investigation.

Personalized learning. One of the few peer-reviewed studies on personalization was conducted by Bingham, Pane, Steiner, and Hamilton (2016), who examined nine schools' implementation of "technology-mediated" personalized learning. In the study, Bingham et al. (2016) defined personalized learning as "a technology-based instructional model designed to tailor instruction to student needs, strengths, and interests to promote mastery of skills and content" (p. 2). The goal of the study was to identify the challenges, disruptions, and contradictions that administrators, teachers, and students encountered while implementing personalized learning. The researchers used a collective case study methodology as their approach to the research and cultural historical activity theory (CHAT) as a theoretical framework to interpret their findings. The study was conducted at both charter and public schools at the elementary, middle, and high school levels.

Bingham et al. (2016) identified three primary challenges that schools encountered in their implementation of personalized learning. The first set of challenges related to technology as there were frequent issues with internet connectivity, hardware, and software at the schools. A number of schools also reported that because they used multiple digital platforms and data management systems, it was difficult for them to gather and use data effectively. The second major challenge that schools encountered was that many teachers did not feel prepared to change their practice and use technology to facilitate personalized learning. To compound this challenge, teachers felt they received inadequate professional development to learn how to effectively incorporate technology into their teaching practice. The third challenge schools confronted was reconciling new

approaches to assessment and measurement of student learning (e.g., mastery-based grading) with traditional expectations of states, parents, students, and post-secondary institutions. While these new grading practices supported personalization, they represented a significant shift in traditional assessment approaches and therefore introduced some difficulties for schools in communicating student progress to various stakeholder groups.

While Bingham et al.'s (2016) study documented the challenges nine schools faced in implementing technology-based models of personalized learning, it offered little insight on students' experiences with more humanistic approaches to personalization. Although some student perspectives were included in Bingham et al.'s (2016) study, they were primarily used to identify the challenges and disruptions of personalized learning implementation at the school level. Little insight was offered on students' experiences with personalized learning as a pedagogy. Additionally, although the authors identified common features of the participating schools such as "mastery-based learning, personalized learning approaches, and blended learning," they provided minimal information about what personalized learning looked like in practice at these schools (pp. 12-13). The information that was provided, including the study's own definition of personalization, suggests the schools' practices aligned more with the technology-based and teacher-directed definitions of the term offered by Chen (2008) and the U.S. Department of Education (2010). Therefore, the study's insight on students' experiences with more humanistic approaches to personalized learning is limited.

Two recent studies commissioned by the Bill & Melinda Gates Foundation also investigated more teacher-directed and technology-focused approaches to personalized

learning (Bill & Melinda Gates Foundation, 2014; Pane, Steiner, Baird, & Hamilton, 2015). These studies defined personalized learning as:

> Systems and approaches that accelerate and deepen student learning by tailoring instruction to each student's individual needs, skills, and interests. Students have a variety of rich learning experiences that collectively will prepare them for success in the college and career of their choice. Teachers play an integral role by designing and managing the learning environment, leading instruction, and providing students with expert guidance and support to help them take increasing ownership of their learning. (Bill & Melinda Gates Foundation, 2014, p. 2)

Although the schools that participated in these studies used varying models of personalization, the researchers suggested the common features that supported personalized learning at these sites were learner profiles (i.e., records of students' strengths, interests, needs, etc.), personal learning paths (i.e., students having the ability to pursue learning outside of school and/or make choices about how they progress through content), competency-based progression, flexible learning environments, and emphasis on college and career readiness (Pane et al., 2015, p. 3).

The Bill & Melinda Gates Foundation (2014) study involved 23 public charter schools that were primarily located in urban communities and served students from low-income families. Participating schools had been implementing personalized learning for at least two years. The study found that students at the 23 personalized learning schools (at the elementary, middle, and high school levels) made significantly greater gains on standardized reading and mathematics assessments than students in a virtually matched comparison group. Given the variety in how the schools implemented personalized

learning, however, the researchers acknowledged that they were unable "to identify which particular instructional approaches may account for the positive student learning outcomes identified in math and reading" (Bill & Melinda Gates Foundation, 2014, p. 5). Beyond assessing student achievement, the researchers also surveyed students and teachers to learn more about their perceptions of their schools. The only finding reported related to students' perceptions of their schools, however, was that their responses diverged from their teachers' "regarding how much choice and control students have about which topics they study, which instructional materials they use, and to what extent they can track their own progress" (Bill & Melinda Gates Foundation, 2014, p. 22). The authors did not make clear the direction in which these perceptions diverged.

Pane et al.'s (2015) follow up to the Bill & Melinda Gates Foundation (2014) study similarly found that students in 62 public charter and district schools that implemented personalized learning made significantly greater gains in reading and math achievement compared to a virtually matched comparison group. The researchers noted, however, that the effect size was largest at the elementary level and that the gains were not statistically significant at the high school level (Pane et al., 2015, p. 9). The study also found that the six district schools in the sample that adopted personalized learning did not show statistically significant growth in reading and math achievement. Beyond comparing student reading and math achievement in personalized learning environments with more traditional schools, the researchers attempted to determine if any particular elements of personalized learning (e.g., out of school learning, flexible learning paths, etc.) were more strongly associated with student achievement than others. Pane et al. (2015) found that student grouping practices driven by data and flexibility, student

conversations about data and its relation to their learning goals, and learning spaces that supported grouping practices were, in combination with one another, associated with successful schools although they recommended caution in drawing firm conclusions from these results based on methodological issues.

Although the Bill & Melinda Gates Foundation studies showed promise that students in schools using personalized learning practices made greater gains in reading and math achievement than their virtually matched peers, they offered little insight into students' experiences with these approaches. Students were surveyed in both studies, yet minimal information on their perceptions was included in the final research reports. It is also unclear the extent to which the models employed in these schools aligned with this study's definition of personalized learning. The researchers acknowledged that personalized learning practices differed across the participating schools, and administrator reports from the study indicated that the "extent to which students were able to make choices about their learning varied by course, teacher, and age of the student, with older students often being given more choice than younger students" (Pane et al., 2015, p. 17). It is likely, then, that many of the practices employed in these schools aligned more closely with the U.S. Department of Education's (2010) teacher-directed definition of personalized learning. Indeed, the Bill & Melinda Gates Foundation's (2014) own definition of personalized learning aligns more closely with teacher-directed rather than student-directed conceptions of the term.

Clarke's (2013) descriptive case study of the Pathways program at Mount Abraham Union Middle/High School in Bristol, Vermont offered some insight into students' experiences with more humanistic approaches to personalized learning that are

the focus of the present study. Although he did not explicitly frame his work as research, Clarke collected data through interviews and observations over a period of three years while serving as a "consultant to the faculty, a community mentor, and a volunteer advisor" at Mount Abraham (p. xv). This data served as the foundation for Clarke's detailed portrait of personalization at Mount Abraham, which illustrated the culture and philosophies of the Pathways program, the structure of the personalized learning process, the systems that enable and support personalization, and the day-to-day functioning of the program.

Student narratives played an important role in Clarke's (2013) description of the Pathways program. Throughout the study, Clarke used lengthy excerpts from student interviews to illuminate particular features and characteristics of personalized learning in the Pathways program. For example, he used student reflections on their Pathways projects to help describe each step of the personalized learning process and to illustrate the different trajectories that student learning can take within the program. Students largely described positive experiences with personalized learning in the Pathways program although some acknowledged it was a struggle for them to transition from teacher-directed learning environments to a more student-driven setting. While these narratives offered insight into students' experiences with personalized learning, their primary function was to enrich Clarke's description of the Pathways program rather than to serve as the basis for a systematic analysis of students' experiences within the learning environment. In this way, the study's contribution to understanding students' experiences with personalized learning was relatively limited.

Montessori education. Empirical research on Montessori education is relatively sparse, particularly at the secondary level. One study that is pertinent to the present research was carried out by Rathunde and Csikszentmihalyi (2005a), who compared the motivation and quality of experience of middle school students in Montessori schools with those attending school in more traditional learning environments. The five Montessori schools selected to participate in the study were purposely chosen for their alignment with optimal experience (flow) theory and TARGET reform proposals. The common characteristics of these schools were that they focused on intrinsic motivation and "freedom within discipline," provided students significant time for self-directed work, did not track students, afforded opportunities for students to make significant decisions that affected the school (e.g., curriculum choices, where to go on field trips, etc.), and offered more individualized and small group instruction than whole group lecture (p. 348). The researchers also identified six middle schools that were demographic matches to serve as a comparison group and consulted a variety of qualitative data (e.g., observations and interviews) to confirm that they differed from the Montessori schools on the five selection criteria described above.

Approximately 140 students from the five Montessori schools and 150 students from more traditional middle schools were surveyed using the Experience Sampling Method (ESM), which measured a range of variables related to students' activities, motivation, and quality of experience in school. The researchers used two-way multivariate analysis of covariance (MANCOVA) to test for differences in students' motivation and quality of experience in Montessori schools compared with students in the more traditional schools. Rathunde and Csikszentmihalyi (2005a) found that "Montessori

students reported higher affect, potency (i.e., feeling alert and energetic), intrinsic motivation (i.e., enjoyment, interest), and flow experience than students from traditional middle schools" (p. 363). Traditional students, on the other hand, perceived their schoolwork to be more important but associated it with greater feelings of drudgery. The study results further suggested that Montessori students spent approximately three and a half hours more per week engaged with work they perceived as important and interesting than their peers in more traditional school settings. The researchers contended that both the educational practices and learning environments of the Montessori schools contributed to the quality of students' experiences and motivation as a parallel study (Rathunde & Csikszentmihalyi, 2005b) found that there were clear differences in the schools' learning environments.

Rathunde and Csikszentmihalyi's (2005a) study is valuable within the context of the present investigation because it suggested that Montessori education, which aligns with this study's definition of personalized learning, can contribute to a more beneficial quality of experience for students when compared to more traditional educational models. Their research provided a strong foundation to further investigate the extent to which other models of personalized learning are associated with the positive motivational and experiential outcomes found in their study on Montessori middle schools. Although Rathunde and Csikszentmihalyi's (2005a) study suggested that students in Montessori schools experienced higher affect, potency, intrinsic motivation, and "flow" than their traditional school counterparts, it provided little insight into the facets of the learning environment that contributed to these feelings or why they experienced them at higher levels than their peers in more traditional schools. Further qualitative investigation is

needed to understand the aspects of personalized learning within Montessori schools that contribute to different qualities of experience for students in comparison to more traditional classroom settings.

Big Picture Schools. As is the case with Montessori education and personalized learning more generally, empirical research on the Big Picture model is relatively limited (Alger, 2016). One of the first studies of the Big Picture model was conducted by Levine (2002), whose case study of the Met offered the most comprehensive portrait of Big Picture's approach to personalized learning to date. Levine collected data over a two-year period through observations, document review, and interviews with the school's founders and principals, advisors, students, community mentors, and parents. Using this data, Levine (2002) provided a detailed description of the Big Picture model's components (e.g., its advisory structure, internships, interest-based projects, learning goals, etc.), culture, and underlying philosophies. Levine also offered insight into the day-to-day functioning of the Met through vignettes based on his observation of advisory activities, student internships, and other school-related activities such as the morning assembly or "pick-me-up."

Student perspectives were woven throughout Levine's depiction of the Met much in the same way that they were in Clarke's (2013) depiction of the Pathways program at Mount Abraham Union Middle/High School in Vermont. While direct quotations and documentation of school activities offered some insight into the student experience with various facets of the Big Picture model, student perspectives were primarily used to highlight the different features of the school and to bring Levine's descriptions of the Met to life. Levine also did, however, offer brief portraits of three students from the Met's

first graduating class to illustrate the different learning pathways that students can pursue through the Big Picture model. These students all described stark contrasts in their experiences at the Met compared with their previous high schools, particularly in terms of their feelings of relatedness, motivation, and engagement in school. For example, in comparing her previous school to the Met, one student said, "I hated getting out of bed, and I didn't feel like many teachers really cared. At the Met it's more like a family, and I always know that they're going to support me and help me move up" (Levine, 2002, p. 1). While these portraits offered some insight into students' experiences with personalized learning at the Met, their depth of examination was relatively limited. Indeed, the student experience was not the primary unit of analysis in the study.

Riordan (2006) made students' experiences with the Learning Through Internships (LTI) component of the Big Picture model the primary unit of analysis of her study to better understand Big Picture's experiential design. Riordan (2006) interviewed five students, who varied in their backgrounds and internship experiences, four times over the course of a five-month period to learn more about their experiences with the LTI component of the model. She also observed students in their LTI and school settings, collected student learning plans and pieces of autobiographical writing, and engaged in weekly email communications with study participants to gain insight on their experiences and the experiential learning process itself.

Riordan's (2006) findings primarily focused on the key challenges that students confronted during their LTI experiences and how community mentors and advisors supported students in their LTIs. The primary challenges that students confronted in their LTIs were managing their LTI experiences, learning from their mentors and advisors,

connecting their LTIs to Big Picture's Learning Goals, and navigating new contexts and types of information. Riordan (2006) found that community mentors supported students by actively communicating with them and their Big Picture advisors, being involved in their LTI projects, fostering relationships with them, and helping them develop essential knowledge and skills in their fields of interest. The findings also suggested that Big Picture advisors supported students by fostering a relationship with them and their mentors, helping them connect their LTIs to Big Picture's Learning Goals and overall design, and guiding them through their academic work. These study findings offered insight on students' experiences with one component of the Big Picture model, LTIs, but did not document their experiences with other important aspects of personalized learning associated with the school such as their interest-based projects and advisories. Therefore, Riordan's (2006) study only provided partial insight on the phenomenon of interest in the present investigation.

Alger (2016) provided a deeper and more systematic analysis of students' experiences with personalized learning at the Green Valley Big Picture School (GVBPS). Alger (2016) used qualitative case study methods to better understand how students experienced the Big Picture model and how the school's structures contributed to those experiences. Within this broader focus, Alger was interested in understanding how students' experiences in GVBPS contributed to their identity development and career and college readiness. Sixteen of the schools' 61 students were purposively sampled to participate in interviews and focus groups as Alger sought variance across a range of demographic variables (e.g., race, gender, socioeconomic status, achievement, etc.).

Alger's (2016) findings that are pertinent to the present investigation related to students' perceptions of the learning environment at GVBPS. Study participants largely described GVBPS as a more caring learning environment than their previous schools and felt they could make better connections with their teachers and peers because of the school's small size and the personalized nature of their interactions. Several students compared their school to a family given the care they perceived in the environment and the close personal connections they developed with their teachers and peers. Study participants also valued the opportunity to learn through their interests at GVBPS, and some students suggested they were more internally motivated and engaged in their work when they studied topics about which they were passionate. Finally, a few students described the flexibility and freedom of the Big Picture as beneficial to their learning. While some of Alger's (2016) findings focused on students' identity development and college and career preparation through GVBPS, those related to students' perceptions of the learning environment and school structures began to offer some useful insights for understanding their experiences with personalized learning.

Summary. As this review of the literature on personalized learning indicates, there is a relative dearth of research on students' experiences with this educational approach. Just three studies (Alger, 2016; Rathunde & Csikszentmihalyi, 2005a; Riordan, 2006) have made students' experiences with personalized learning the primary unit of analysis. Only one of those studies (Rathunde & Csikszentmihalyi, 2005a) sought to understand those student experiences with personalized learning within the context of an existing framework of psychological needs and motivation. That study was quantitative in nature and therefore offered less depth of understanding of the student experience than

could be explored through qualitative methods. The two qualitative studies focused specifically on students' career and college readiness, identity development (Alger, 2016), and experiences in their personalized internships (Riordan, 2006). The present study aimed to contribute to this nascent area of research by exploring students' experiences with personalized learning using self-determination theory as a lens for the investigation.

Theoretical Framework: Self-Determination Theory

Self-determination theory (SDT) was used as a framework for this study. As a theory of motivation, development, and psychological needs, SDT is well-aligned with the humanistic philosophies of education that underlie personalized learning as it is fundamentally concerned with providing students "meaningful opportunities for realizing [their] authentic aims" and "developing capacities that include curiosity, interest, confidence, access to resources, and empowerment" (Ryan & Niemiec, 2009, p. 270). SDT has been tested in a variety of contexts and consistently shown that when individuals' basic psychological needs of autonomy, competence, and relatedness are met, they display greater motivation, learning, performance, and personal well-being (Ryan & Deci, 2000b). SDT offers a lens for understanding the relationship between social environments in schools and students' experiences within them. As Ryan and Niemiec (2009) note, SDT's emphasis on students' experience in schools is important because it "*is* the life of our students. It seems that the most important task of schools is to provide a quality experience for students, comprising interest, engagement, and growth" (p. 266). Given the alignment between SDT, humanistic education, and this study's focus on students' experiences with personalized learning, it was an appropriate

theoretical framework for the present investigation. The following section offers an overview of SDT and the most pertinent empirical studies conducted within this tradition that relate to education.

Overview of self-determination theory. SDT is a macro-theory of human motivation, development, and basic psychological needs. In relation to education, SDT posits that human beings "possess inherent growth tendencies (e.g., intrinsic motivation, curiosity, and psychological needs) that provide a motivational foundation for their high-quality classroom engagement and positive school functioning" (Reeve, 2012, p. 152). SDT attempts to explain the conditions that foster and promote intrinsic motivation and curiosity and those that undermine and subvert them. One of SDT's subtheories, basic needs theory, proposes that the human needs of autonomy, competence, and relatedness are critical in fostering individuals' inherent growth tendencies and their social and emotional well-being (Ryan & Deci, 2000b). Autonomy refers to an individual's sense of having free will and control over his or her actions and behaviors. Competence relates to individuals' needs to feel capable and effective in their actions and engagement with their surroundings. Relatedness refers to the human need to develop close emotional relationships and "secure attachments with others" (Reeve, 2012, p. 154). SDT proposes that individuals' inherent growth tendencies will be undermined unless these basic psychological needs are met.

Another subtheory within SDT, cognitive evaluation theory (CET), attempts to identify the social factors and conditions that contribute to individual variability in intrinsic motivation. Ryan and Deci (2000b) define intrinsic motivation as "the inherent tendency to seek out novelty and challenges, to extend and exercise one's capacities, to

explore, and to learn" and assert it is critical for both cognitive and social development (p. 70). CET posits that the needs of autonomy and competence must both be met to enhance and sustain individuals' intrinsic motivation. Some examples of conditions that promote competence are appropriate levels of challenge in an activity, positive performance feedback, and "freedom from demeaning evaluations" (Ryan & Deci, 2000b, p. 70). Conversely, negative performance feedback has been shown to undermine feelings of competence and intrinsic motivation (Ryan & Deci, 2000a). Among social factors and conditions that enhance autonomy and intrinsic motivation are "choice, acknowledgement of feelings, and opportunities for self-direction" whereas "threats, deadlines, directives, pressured evaluations, and imposed goals" have been shown to undermine both autonomy and intrinsic motivation (Ryan & Deci, 2000b, p. 70). CET is useful in the context of education by helping educators identify the classroom conditions that tend to promote students' intrinsic motivation and those that typically undermine it.

Although intrinsic motivation is the optimal form of motivation in SDT, it is not the only self-determined type of motivation. SDT's organismic integration theory (OIT) puts forth a typology of motivation that ranges on a continuum from amotivation to intrinsic motivation. Amotivation represents an essential absence of motivation that results from an individual not valuing an activity, not feeling competent, and/or not believing he or she can achieve the desired outcome. Four types of extrinsic motivation lie between amotivation and intrinsic motivation on the OIT motivational continuum. External regulation is positioned next to amotivation and involves behaviors that are performed to meet external demands or to obtain rewards (e.g., doing something because the boss demands it or doing homework to earn candy). Introjected regulation is when an

action is undertaken to avoid guilt or anxiety or to bolster feelings of pride and self-efficacy. External and introjected regulation have an *external perceived locus of causality*, which means they are perceived as originating outside of the self (Niemic & Ryan, 2009). The more autonomous forms of extrinsic motivation are identified and integrated regulation. Identified regulation is when an individual has come to value a certain behavior or regulation and understands it to be personally meaningful and important. Integrated regulation is the most autonomous form of extrinsic motivation and occurs when "identified regulations have been fully assimilated to the self" and brought "into congruence with one's other values and needs" (Ryan & Deci, 2000a, p. 62).

These latter and more autonomous forms of motivation (including intrinsic motivation) have been empirically linked to positive educational outcomes such as higher academic achievement, students' decisions to stay in school, increased retention and depth of learning, more positive emotions in the classroom, and greater satisfaction with school (Guay, Ratelle, & Chanal, 2008). As expected, research within SDT has indicated that students who feel more competent and autonomous (i.e., having an *internal perceived locus of causality*) in the classroom report higher levels of autonomous motivation and better academic performance (Guay, Ratelle, Roy, & Litalien, 2010). One of SDT's basic propositions, then, is that students who feel competent in their schoolwork, have more choice, opportunities for self-direction, positive interactions with teachers, and less deadlines, directives, and pressured evaluations will display better academic and emotional functioning in school.

SDT has informed multiple aspects of this study. First, it helped locate students' experiences with personalized learning as the main unit of analysis for the study. A

primary goal of the study was therefore to understand students' experiences with personalized learning and how they related to various aspects of the social contexts that this educational approach helped foster. SDT also informed the development of the interview protocols that were used to gain insight on students' experiences with personalized learning. Because autonomy, competence, relatedness, and motivation are central concepts within SDT, interview questions were generated to better understand students' experiences with these constructs in their personalized learning environments. More detailed information about how the interview protocol was developed is provided in chapter three. SDT also guided data analysis for this study. Concepts from SDT were used as a priori codes during initial rounds of coding and guided the analytic memos that were written during preliminary attempts to make sense of the data. These concepts also served as an organizing framework for study findings. Further information about how SDT was used to inform the data analysis process is provided in the following chapter.

Chapter 3: Methodology

Chapter Overview

In this chapter, I describe the methods I used to answer my research questions. In the first two sections, I re-state the study purpose and research questions that drove the investigation. I then offer a rationale and justification for using qualitative methods and a pragmatic approach to the research. I also provide a brief rationale for researching the student experience. Next, I describe the paradigm in which the study is grounded and explain how the research conforms to interpretivist methods and assumptions about the nature of reality. Following this discussion, I describe the schools that participated in this research and explain why they were chosen as study sites. In the next two sections, I outline my methods of data collection and analysis. I close the chapter with statements of ethics and researcher subjectivity.

Study Purpose

The purpose of this study was to explore students' experiences with personalized learning at three high schools in Vermont. Specifically, self-determination theory (Ryan & Deci, 2000b) was used as a lens to better understand the extent to which personalized learning fulfilled students' basic psychological needs of autonomy, competence, and relatedness and contributed to their feelings of motivation and well-being in school. The goal of investigating these constructs was to obtain preliminary insight on the quality of students' experiences with personalized learning. Through semi-structured interviews with high school students, the study also aimed to illuminate the facets of personalized learning that both supported and undermined students' experiences with the aforementioned constructs from SDT. These findings were intended to be useful for

educators, school administrators, and policymakers in their considerations of whether and how to adopt more personalized approaches to education.

Research Questions

1. How do students perceive their autonomy, competence, and relatedness within the context of personalized learning?
2. How do students describe their feelings of motivation and personal well-being within the context of personalized learning?

Justification for Qualitative Methods

Qualitative methods are well suited to research questions that aim to understand "the *meaning*, for participants in the study, of the events, situations, experiences, and actions they are involved with or engage in" (Maxwell, 2005, p. 22). According to Maxwell (2005), meaning encompasses everything relating to the "participants' perspectives," including "cognition, affect, [and] intentions" (p. 22). The overarching research question guiding this study is primarily concerned with the meaning students assign to their experiences with personalized learning, particularly as it relates to their feelings of autonomy, competence, relatedness, motivation, and personal well-being. Given the study's aim of understanding students' experiences with personalized learning, qualitative methods were deemed appropriate for the present investigation. Qualitative methods are also suitable for studies in which "a problem or issue needs to be *explored*" (Creswell, 2013, p. 47). Given the limited empirical research on personalized learning, particularly as it relates to students' experiences with the approach, little is known about the phenomenon under investigation in this study. Therefore, qualitative methods are appropriate for exploring the phenomenon and illuminating some of its core features.

Justification for Pragmatic Approach

To answer my research questions, I used a pragmatic approach to qualitative research (Savin-Baden & Major, 2013). Not to be confused with pragmatism as a philosophy, pragmatic qualitative research is "an approach that draws upon the most sensible and practical methods available in order to answer a given research question" (Savin-Baden & Major, 2013, p. 171). Within the methodological literature, pragmatic qualitative research has also been called qualitative description (Sandelowski, 2000) and generic qualitative research (Caelli, Ray, & Mill, 2003; Merriam, 1998). According to Merriam (1998), pragmatic qualitative research is likely the most common approach used in educational research.

Pragmatic qualitative research is an appropriate approach when the goal of a study is to "discover and understand a phenomenon, a process, or the perspectives and worldviews of the people involved" (Merriam, 1998, p. 11). Given that the aim of the present study was to understand students' perceptions of their experiences with personalized learning, I determined that it fit within the pragmatic approach to qualitative research. My use of SDT as a theoretical framework also helped locate the study as pragmatic qualitative research since studies within this approach "typically draw from concepts, models, and theories in educational psychology, developmental psychology, cognitive psychology, and sociology" (Merriam, 1998, p. 111).

Pragmatic research is eclectic in nature and can draw on features of the more established approaches in qualitative research such as case study, grounded theory, and phenomenology (Caelli, Ray, & Mill, 2003; Savin-Baden & Major, 2013). The present study drew on elements of case study and phenomenology in the research design. It was

originally designed as a multi-site case study (Yin, 2014) of students' experiences with personalized learning at three high schools. During data collection and early stages of data analysis, however, I began to identify major similarities in students' experiences across the research sites and personalized learning initiatives. At this point, I determined that analysis and description of students' experiences themselves would be better suited to answering the study's research questions than a focus on the particularistic features of the individual cases (Merriam, 1998). This focus on students' experiences aligned with phenomenology's attention to "lived or existential meanings" (van Manen, 1990, p. 11). My use of SDT as a theoretical framework, however, precluded me from using phenomenological methods, which involve "bracketing" or "suspending one's various beliefs in the reality of the natural world in order to study the essential structures of the world" (van Manen, 1990, p. 11). The study's eclectic nature and adoption of features from case study and phenomenological research help locate it within the pragmatic approach to qualitative research.

Student Perspectives in Research

Since the early 1990s, a proliferation of research in the field of education has sought not only to illuminate students' perspectives on their experiences in school but also to involve youth in school reform efforts (Cook-Sather, 2014). This body of research, broadly termed "student voice," is rooted in the belief that students have "unique perspectives on learning, teaching, and schooling; that their insights warrant not only the attention but also the responses of adults; and that they should be afforded opportunities to actively shape their education" (Cook-Sather, 2006, pp. 359-360). The present investigation is rooted in these beliefs about the value of studying students'

perspectives on their schooling experiences and aims to contribute to this body of research by offering insight on students' perceptions of personalized learning, which remains understudied in the field.

Research Paradigm

The overall study is grounded in the interpretivist paradigm. One of the primary goals of interpretivist research is to better understand "human ideas, actions, and interactions in specific contexts or in terms of the wider culture" (Glesne, 2011, p. 8). Glesne (2011) asserts that within the interpretivist paradigm, "The role of the social scientist becomes that of accessing others' interpretations of some social phenomenon and of interpreting, themselves, other's actions and intentions" (p. 8). Rather than assuming the existence of an objective, fixed reality, interpretivists understand the nature of reality to be socially constructed and constantly changing. Given these understandings of the world and the nature of reality, interpretivist researchers primarily utilize research methods that allow for in-depth and long-term interaction with study subjects in their day-to-day social contexts (Glesne, 2011).

The goal of the present study was to understand how students perceived their experiences with personalized learning at three high schools in Vermont. To develop this understanding, I immersed myself in the activities related to personalized learning at these schools and sought to access students' interpretations of their experiences with this educational approach through semi-structured individual interviews. The research did not aim to uncover a single "truth" of the student experience with personalized learning. As an interpretivist researcher, I sought to illuminate the multiple realities and "truths" of students' experiences with personalized learning rather than attempting to reduce them to

"numbers" or "norms" (Glesne, 2011, p. 8). I also acknowledge that my personal observations and analysis of the data represent just one possible interpretation of students' experiences with personalized learning.

Site Selection and Rationale

Given that the goal of this study was to understand students' experiences with more humanistic approaches to personalized learning, I sought to carry out this research in educational settings that aligned with this study's definition of personalization. To identify these schools, I engaged in conversations with a variety of stakeholders (e.g., university professors, affiliates of non-profit educational organizations, parents, and students) who had knowledge of Vermont schools and initiatives that aligned with this study's definition of personalized learning. Based on these conversations, I identified six public high schools that had personalized learning programs or initiatives that were accessible to all students in the school. After identifying these potential research sites, I had a phone conversation or in-person meeting with the principal of each school to learn more about their approaches to personalization and to gauge their interest in participating in the research. These conversations offered a preliminary understanding of the systems and structures in place at the six schools to support personalized learning.

Once I completed these preliminary conversations with the school principals (all of whom expressed interest in participating in the study), I considered a variety of factors in selecting the schools that would ultimately serve as my research sites. The first factor was feasibility. As the lone researcher carrying out the study, I had limited time and resources to dedicate to data collection and analysis. Given these constraints, I needed to limit the number of schools I selected so that I could carry out the research within a

reasonable timeframe and on a restricted budget. Because I sought to visit my study sites at least once each week during data collection to obtain a deeper understanding of the learning environments and the local contexts in which they were embedded, I decided that studying students' experiences with personalized learning at three schools would offer insight on this phenomenon in varying contexts while not being too taxing for a single researcher to carry out.

In choosing three out of the six potential research sites, I considered my preliminary conversations with stakeholders and principals about the schools' personalized learning initiatives to determine the kinds of insights they might offer on students' experiences with personalization. My conversations with principals from two of the potential research sites revealed that their schools were in the beginning stages of implementing personalized learning and that its presence was relatively limited in their contexts. Because these schools were still developing their personalized learning initiatives, I determined they were not optimal research sites for the present investigation. The four remaining schools each had personalized learning initiatives that had been in existence for at least three years. In this way, the programs were relatively well-established at the schools and regular parts of their educational offerings.

In making my final decision about the three research sites where I would conduct this study, I considered the schools' contexts and demographic characteristics. I sought to carry out my research at the three schools that offered the most diversity in terms of size, geography (e.g., urban, suburban, and rural), and student demographics (e.g., racial, cultural, and socioeconomic). The three schools that maximized this diversity were Arborville High School (AHS), Lakeview High School (LHS), and Riverside High

School (RHS). In the following section, I provide a collective overview of these schools' demographic characteristics and the communities they serve.

Research Site Characteristics

Given the state's unique policy mandates in support of personalized learning, I, in consultation with my dissertation committee, decided it was important to reveal that this study was carried out in Vermont. Because Vermont is a relatively small state with distinct communities and schools, however, describing the demographics of individual schools would likely undermine the anonymity of the research sites. Therefore, I have decided to offer a more collective description of the schools that participated in this study to protect the anonymity of the research sites. Rather than describing each school individually, I will provide a more general demographic overview of the research sites that groups the schools together at times to purposely obscure their characteristics.

The three high schools that participated in this study varied somewhat in terms of their size. When this study was conducted, two of the high schools had enrollments of under 250 students while one school served more than 500 students in grades 9-12. Reflecting Vermont's broader racial demographics, more than 90% of students at two of the participating high schools identified as white. The third research site was a bit more racially and culturally diverse with less than 50% of students self-identifying as white and more than 30% classified as English language learners (ELLs). The three schools were quite diverse socioeconomically with approximately 20% of students qualifying for free or reduced-price lunch (FRPL) at one school, 50% at another school, and 75% at the third research site. When this study was conducted, two of the participating schools had graduation rates of approximately 90% while the third had a graduation rate of about

80%. Among students who graduated, about half of students at two schools and 70% of students at the third research site continued on to a two-year or four-year college. The three schools served students who lived in rural and urban communities. Most students at these three schools, however, lived in more rural areas. The school budgets at the research sites ranged from about $7-15 million.

Data Collection

Data for this study were collected between September and December of 2016. All study procedures and research activities were approved by The University of Vermont's Institutional Review Board in mid-July of 2016. Prior to the beginning of the 2016-17 school year, I met with the principal of each study school to discuss my research and timeline. Each principal introduced me to their faculty during in-service meetings and connected me with educators who were deeply involved in the personalized learning initiatives at their schools. These educators served as key informants (Creswell, 2013) throughout the study and opened their classrooms and learning spaces to me for the entirety of the research process. I visited each school at least one day per week during the data collection process and spent between three and seven hours per visit.

I spent the first month of the 2016-17 school year observing a variety of classrooms and other learning spaces at the three research sites to gain a deeper understanding of the personalized learning initiatives at each school. I selected the settings I observed based on my preliminary discussions with principals and key informants about the classes and spaces in which students had opportunities to personalize their learning. These initial observations served a few different purposes. The first purpose was to begin establishing a relationship with potential participants (Bogdan

& Biklen, 2007). By observing and joining in classroom experiences, I became familiar to many students who ultimately participated in the study. I also used this first month of observations to identify the settings and initiatives that best matched this study's definition of personalized learning, which would ultimately inform my sampling. Because personalized learning is defined and put into practice in diverse ways, I needed to ensure that I interviewed students who had experience with personalized learning as it is defined in this study. More information is provided below about how I identified the settings that aligned with this study's definition of personalized learning. The final purpose of these observations was to contextualize and triangulate the data collected through interviews with students, which were the primary source of data for this study.

Between September 6th and October 5th of 2016, I conducted a total of 58 hours of observation across the three research sites. Table 1 offers a breakdown of the amount of time I spent observing various learning spaces at each school. As Table 1 indicates, I began spending more time in certain settings once it became clear that they were the primary places where this study's definition of personalized learning was happening at their schools. During my visits to these settings, I took on the role of a participant observer (Patton, 2015). I participated in classroom activities when opportunities presented themselves as I sought to begin developing a rapport and relationships with potential study participants (Bogdan & Biklen, 2007). I wrote memos (Corbin & Strauss, 2015) immediately following these activities to describe them in detail and to record my initial impressions of what had occurred. When I was not participating in these settings, I was taking detailed field notes of classroom activities with particular attention to how they did or did not align with this study's definition of personalized learning.

Specifically, I focused on how decisions were made about the types of learning activities in which students engaged, how students and educators interacted, and the extent to which students' interests, aspirations, needs, and social identities were considered in the development of learning experiences. These observations were intended to help identify the appropriate "cases" of personalized learning for this study (Stake, 1995).

I also had several informal conversations with key informants about their schools' personalized learning initiatives during this stage of data collection. I wrote memos immediately following these conversations to record the educators' perspectives on personalization and their descriptions of the systems and structures in place that offered students opportunities to personalize their learning. I also documented my impressions of their comments in my observation notes. These conversations, in addition to my observations of different learning spaces, were used to inform sampling for student interviews, which is described in detail in the following section.

My observations and conversations with key informants revealed that out of the ten settings I observed across the three research sites, four initiatives aligned with this study's definition of personalized learning. These initiatives were: 1) the Odyssey program at AHS, 2) the Lakeview Personalization Program (LPP) and 3) LearnOut program at LHS, and 4) the Personalized Learning Center (PLC) at RHS. In these programs, students had opportunities to design their own learning experiences by collaborating with adults to choose their topics of study and to create plans for how they would develop new knowledge and skills and demonstrate their learning. Students were the primary drivers of their learning in these programs as their projects emerged from their personal interests and preferences as learners, but they worked in partnership with

educators to develop learning experiences that were responsive to their individual needs and aspirations. Although these learning experiences were informed by school standards, they were not constrained by them. In this way, students had flexibility to pursue, foster, and develop their personal interests and passions. These programs also had systems and structures in place that enabled students to access community resources if they sought to learn through real-world experiences and internships or work with local experts in their fields of interest. Although a few of the other classes I observed did offer students choice in the topic and/or process of learning at times, they were primarily teacher-directed in that educators largely determined the scope and sequence of the curriculum. Given that learning experiences were mostly driven by teachers in these classes, I determined that they did not align with this study's definition of personalized learning. With the four personalized learning initiatives at the research sites identified, I proceeded to interview students about their experiences in these programs. The process I used to sample and interview students is described in detail in the following section.

Table 1: Observation Hours 9/6/2016 - 10/5/2016

School	Initiative/Class	Total Observation Hours
Arborville	Odyssey	13
Arborville	Fusion	6.5
Arborville	Core Subject	1.5
Lakeview	Lakeview Personalization Program	8

Lakeview	Lakewood Connected Learning	3
Lakeview	First-Year Core Subjects	7
Riverside	Personalized Learning Center	13
Riverside	Core Subject	6

Sampling. I used a stratified purposeful sampling strategy (Creswell, 2013) as I sought to interview students who could offer insight on their experiences with personalized learning while also obtaining diversity in perspectives. After determining that the PLC, Odyssey, LPP, and LearnOut programs were the only initiatives at the research sites that matched this study's definition of personalized learning, I decided to limit my sample to students who had participated in one of these initiatives. Students' experiences with personalized learning in these settings would become the "collective case" for my study (Stake, 1995).

I began the process of recruiting student participants in late September of 2016. At the start of the recruitment process, I provided my key informants with a document that outlined the characteristics of students with whom I hoped to speak from the initiatives that matched this study's definition of personalized learning. At each site, I sought to interview students who flourished, had shown growth, and struggled with personalized learning in an attempt to capture a range of student experiences with this educational approach. During the recruitment process, key informants contacted students

who fit the characteristics I had specified and gauged their interest in participating in the research. Students who expressed interest in being interviewed were given consent forms approved by The University of Vermont's Institutional Review Board and were instructed to speak with their parents/guardians about study participation. Only students who returned consent forms that they and their parents signed were eligible to participate in the study. Students and parents were free to talk with me if they had any questions about participation in the research.

By the end of the study, 28 students had returned signed consent forms and expressed interest in participating in the research. There were 11 participants from the Odyssey program at AHS, 5 participants from the LPP at LHS, 4 participants from the LearnOut program at LHS, and 8 participants from the PLC at RHS. I was able to collect self-reported demographic information from 16 of the participants through a seven-question survey. Because just under half of the participants did not complete the survey, I cannot fully describe the demographic characteristics of the sample. It is worth noting, however, that a large majority of students who completed the survey described themselves as "average-to-high achievers" in school and indicated that they intended to enroll in a four-year college or university after graduating from high school. The overwhelming majority of students also self-identified as white. Self-reported demographic data were missing, however, for 12 participants.

It is also important to note that this sample ended up being more of a convenience sample (Creswell, 2013) by the end of the study because some of the students whom key informants initially contacted using the stratified purposeful sampling criteria indicated they were not interested in participating in the research. After these initially identified

students declined to participate in the study, key informants contacted students they believed would be interested in being interviewed and would offer unique insights on their experiences with personalized learning. In this way, the final sample represented more of a convenience sample than a stratified purposeful sample. The implications of this convenience sampling are discussed further in the limitations section of chapter five.

Interviews. Once participants were identified and returned signed consent forms, they were invited to participate in individual standardized open-ended interviews (Patton, 2015) about their experiences with personalized learning. These interviews served as the primary source of data for this study. Interviewing is an effective method for collecting data that is not directly observable and for obtaining insight into participants' perspectives and experiences with actions that occurred prior to the research (Patton, 2015). As Josselson (2013) notes, interviews allow researchers to "encounter the mental sets of the interviewee—the subjectively created reality in which the interviewee experiences life" (p. 3). Interviews aim to illuminate rather than reduce the complexity of those experiences (Josselson, 2013). Given that the goal of the study was to investigate students' experiences with personalized learning, particularly related to their perceptions of their autonomy, competence, relatedness, motivation, and well-being, I decided interviews were the best method of collecting data to achieve this aim. I also chose interviews as a data collection method because they are frequently used in case study, phenomenology, and pragmatic approaches to qualitative research (Savin-Baden & Major, 2013), which all informed the design of this study.

I conducted a total of 28 interviews with students at AHS, LHS, and RHS between the beginning of October and the end of December 2016. Table 2 provides a

breakdown of the number of students interviewed from each program at each research site. By the time I began interviews in early October, most students were familiar with me because I had been observing and participating in their personalized learning environments over the course of the previous month. All interviews were carried out at the research sites during regular school hours. Interviews lasted 20-73 minutes. This wide range in length was due to the fact that some students provided detailed elaboration on their responses while others offered more limited answers to the protocol questions. The upper and lower limits of the range represented relative outliers as 25 of the 28 interviews lasted 30-60 minutes. Despite the variation in length, all students completed the interview protocol and were afforded the opportunity to share their unique experiences with personalized learning. All interviews were audio recorded and transcribed. The following sub-section offers a more detailed description of how the interview protocol was developed.

Table 2: Number of Students Interviewed at Each Research Site

School	**Personalized Learning Initiative**	**Number of Students Interviewed**
Arborville	Odyssey	11
Lakeview	Lakeview Personalization Program (LPP)	5
Lakeview	LearnOut	4
Riverside	Personalized Learning Center (PLC)	8

Interview protocol. All interviews began with open-ended questions for students to discuss their general experiences with personalized learning at their schools. I provided participants with a student-friendly version of the study's definition of personalized learning (see Appendix A) and asked students, **"**Based on this definition, can you talk about your experiences with personalized learning at your school?" This question and a series of related prompts were intended to elicit insight into students' general experiences with personalized learning and aligned with phenomenological interviewing methods (van Manen, 1990). Because I was also interested in students' experiences with autonomy, competence, relatedness, motivation, and well-being in their personalized learning environments, I turned to the self-determination theory (SDT) literature to inform the questions I asked about these constructs. Specifically, I consulted a number of quantitative instruments frequently used to measure autonomy, competence, relatedness, and motivation within the SDT research to determine how to structure and word my qualitative interview questions. The instruments I consulted were the Basic Psychological Needs Scales, Learning Climate Questionnaire, Self-Determination Scale, Perceived Competence Scales, and the Intrinsic Motivation Inventory. I accessed all of these instruments on selfdeterminationtheory.org, which is a database of peer-reviewed resources and validated survey instruments from SDT. I compiled items from these instruments onto a spreadsheet and organized them according to the construct they were intended to measure.

In developing questions for my interview protocol (Appendix B), I attempted to include words from the quantitative SDT instruments that were used most frequently to assess the constructs of autonomy, competence, relatedness, and motivation and that

would be most easily understood by high school students. For example, the word "free" appears in a number of SDT items intended to measure autonomy, and it is also used in Reeve's (2012) definition of the construct in reference to the sense of psychological freedom that individuals feel when their need for autonomy is fulfilled. I assumed students would be familiar with the term freedom and therefore used it in one of the interview questions that aimed to illuminate students' feelings of autonomy within their personalized learning environments. In another case, I took a closed-ended statement from the Perceived Competence Scales ("I feel confident in my ability to learn this material") and phrased it as an open-ended question ("Can you talk about how confident you feel in your ability to accomplish your goals and projects in [this space]?") to gain insight on students' feelings of competence within their personalized learning environments. I attempted to write all my interviews questions so that they were as succinct and open-ended as possible to afford students freedom in their responses. I also generated numerous prompts to elicit further response if necessary (see Appendix B).

Data Analysis

Because my data were collected from four different personalized learning initiatives and I was interested in understanding students' perceptions of their autonomy, competence, relatedness, motivation, and well-being within these learning environments, I used a variable-oriented approach to cross-case analysis (Miles, Huberman, & Saldaña, 2014), which aligned with the study's broader adoption of aspects of case study research. According to Miles, Huberman, and Saldaña (2014), a variable-oriented approach is "conceptual and theory centered from the start," and "The 'building blocks' are variables and their interrelationships rather than cases" (p. 102). When using this approach to data

analysis, researchers look for themes that span cases rather than focusing on detailed description of the cases themselves (Miles, Huberman, & Saldaña, 2014). For this study, I was interested in understanding students' perceptions of the constructs identified in the research questions (i.e., autonomy, competence, relatedness, etc.) and their relationship to variables in their personalized learning environments rather than developing a holistic understanding of the individual cases (i.e., personalized learning initiatives) themselves.

I began the process of data analysis by writing memos (Miles, Huberman, & Saldaña, 2014) after each interview. In these memos, I documented my initial impressions of students' responses and any significant or surprising ideas that emerged during the interview. As I conducted more interviews, I was able to start identifying preliminary patterns and themes in my memos. With these consistent patterns emerging, it became easier to identify new and distinct ideas in subsequent interviews. Through this process of memoing, I began making sense of the data and identifying preliminary themes. I noted in a memo after my 25th interview that I was beginning to reach data saturation (Corbin & Strauss, 2015) as the same ideas kept emerging in student interviews across the four programs.

After completing all my interviews and having them transcribed, I used HyperRESEARCH software (version 3.5.1) to begin coding each interview transcript. I coded the transcripts in chronological order from the first interview conducted to the last. I used both deductive and inductive codes (Miles, Huberman, & Saldaña, 2014) during this first pass through the data. The deductive codes were drawn from the study's theoretical framework as I used key concepts from SDT to label the data. For example, I used the codes AUTONOMY, COMPETENCE, RELATEDNESS, INTRINSIC

MOTIVATION, and EXTRINSIC MOTIVATION when students made comments related to these concepts within the data. SDT concepts alone, however, did not account for all the richness and complexity of the data. Therefore, I used open and in vivo codes (Saldaña, 2016) in situations where the deductive codes from SDT did not capture the essence or nuance of the data. For example, a number of students explained they had a sense of "voice" in their personalized learning environments. Although it was later determined that students' perceptions of having a voice contributed to their sense of autonomy, the concept of voice had unique and distinct qualities that I wanted to maintain in the first pass through the data. Therefore, I coded these segments of the transcripts as VOICE. I used this coding process for all interview transcripts across the four personalized learning programs. This initial pass through the 28 interview transcripts yielded 57 unique codes.

As an intermediate step between this initial round of coding and the development of categories, I wrote analytic memos after coding each interview transcript. I asked myself, "What is this a case of?" and wrote memos about the key ideas and concepts that emerged within the context of each interview. The goal of this process was to begin making sense of each student's experience with personalized learning and to start identifying some of the concepts and ideas that were common across interviews. I wrote an analytic memo about each interview (28 total) and bolded the key concepts and ideas so that I could refer back to them during subsequent stages of data analysis.

After writing these analytic memos, I began to group my first cycle codes (Miles, Huberman, & Saldaña, 2014) into categories. I designated the deductive codes from SDT (i.e., AUTONOMY, COMPETENCE, RELATEDNESS, etc.) as the major categories at

the beginning of this process since the study aimed to illuminate students' experiences with those constructs. I then reviewed the inductive codes and their associated segments of text to identify relationships between these and the deductive codes. For example, I determined that the inductive code VOICE was related to the deductive code AUTONOMY because students' perceptions of having a say in personalized learning contributed to their sense of control and having an internal perceived locus of causality. Therefore, I added VOICE to the AUTONOMY category. Similarly, the codes COMPETENCE, ADULT SUPPORT, and FLEXIBILITY frequently overlapped one another in the data. Therefore, I determined that the codes of ADULT SUPPORT and FLEXIBILITY related to students' feelings of COMPETENCE in their personalized learning environments and added them to this category. To clarify these relationships between the categories and their sub-codes, I created concept maps (Appendix C) to illuminate the emerging data clusters. During this process, I determined that 24 of the original codes did not fit within the five major descriptive categories. I therefore dropped these codes, which in many cases were used to label only a few segments of text, from subsequent stages of data analysis.

Once developed, I examined and scrutinized each category. During this process, I came to recognize that my initial deductive codes (e.g., AUTONOMY, COMPETENCE, AND RELATEDNESS) were concealing some of the nuance and complexity within the data. For example, the code AUTONOMY was used broadly to label segments of text in which students described their sense of freedom or their feelings of control in the learning environment. I determined that these codes were more structural (Saldaña, 2016) in nature and did not help to illuminate the distinct facets of autonomy (e.g., sense of

psychological freedom, internal perceived locus of causality, etc.) or the aspects of the learning environment that contributed to students' experiences with this construct. Therefore, I went back through the data and used sub-codes (e.g., PSYCHOLOGICAL FREEDOM) to support finer-grained descriptions of the segments of text initially labeled with the broad structural codes. I intended to use these sub-codes and the previously developed inductive codes as sub-categories to describe students' experiences with the five constructs identified in the study's research questions.

To check the representativeness of the sub-categories within and across each program, I created matrices that arrayed sub-categories by students and programs (a few examples of these matrices are provided in Appendix D). In some cases, sub-categories that were representative of students' experiences in one setting did not transfer to other programs or initiatives. For example, one of the matrices revealed that the sub-category of FAMILY was common in LPP students' descriptions of their relatedness but not in interviews with participants from other programs. Because comparisons of their program to a family helped illuminate students' sense of relatedness in the LPP, however, they were included as a sub-theme in the findings with the caveat that such feelings of familial relationships were unique to this program. Additionally, the unique characteristics of the LPP that contributed to students' sense of being a family were explored in the findings. In other situations, sub-categories that appeared in only a few interviews and did not help to illuminate the complexity of students' experiences or the facets of personalized learning that contributed to those experiences were dropped from the analysis.

During this process of checking for the representativeness of sub-codes, I also searched for outliers and negative cases (Miles, Huberman, & Saldaña, 2014; Patton,

2015). Within each major category, I looked to identify cases of individual students who did not fit within the dominant patterns that were emerging in the data. When scrutinizing the relatedness category, for example, I searched for participants who suggested they felt little connection with their peers or teachers in their personalized learning environments since the dominant trend was that students perceived close relationships with others in these settings. Similarly, I looked for students who suggested they did not feel competent in their personalized learning environments because most participants indicated they were confident in their abilities to carry out their projects and meet their goals in these settings. These cases were included in the findings for each category to capture the idiosyncrasy of students' experiences with personalized learning and to enhance the trustworthiness of the analyses.

Once the categories were developed, sub-categories were checked for representativeness, and outliers were identified, I used them as the organizing framework for writing up the study findings. Within each category, I used the sub-categories and associated segments of student interview data to provide detailed descriptions of students' experiences with and perceptions of the constructs of interest from SDT. I sought to present the general trends and patterns that emerged within each category while also accounting for the nuance and idiosyncrasy of individual programs and students. I attempted to illuminate these idiosyncrasies by presenting outliers and sub-themes that were distinct to individual programs. I also used the sub-categories as a framework for describing the aspects of the personalized learning initiatives that contributed to students' perceptions of their autonomy, competence, and relatedness in these settings. Through

this process, I generated a preliminary set of findings that I sought to verify using means described in the following sub-section.

Trustworthiness. In addition to conducting the negative case analyses (Patton, 2015) described in the previous section, I performed member checking (Miles, Huberman, & Saldaña, 2014) to improve the trustworthiness of my analyses. Once I completed my data analysis and generated a preliminary set of findings, I returned to the research sites to talk with study participants about my interpretations of the data and to gather their input on whether the findings were representative of their experiences with personalized learning. At each school, I met with students who participated in the study and provided them a summary of my preliminary findings. Once students read through the findings, I asked them to provide feedback on each theme and the extent to which it was representative of their experiences in their personalized learning environments. I audio recorded these conversations so that I could use students' comments to refine the major themes and findings during subsequent rounds of data analysis. I conducted two separate focus groups with a total of nine students from the Odyssey program, one focus group with two students from the LPP, one focus group with three students from the LearnOut program, one focus group with four students from the PLC, and one individual conversation with a student from the PLC.

Students largely confirmed the trustworthiness of my analyses during the member checking conversations. They suggested that the findings, as a whole, effectively captured their experiences with personalized learning at their schools. One student's assertion that "I think you nailed this" was representative of the general response I received from study participants during the member checking process. Some of these

conversations did, however, reveal some areas for refinement in my findings. For example, a few students from the PLC suggested that individualized interactions with teachers only contributed to their sense of relatedness when they felt the educators genuinely cared for them and could take on their perspectives. The feedback from another student indicated that he was a "negative case" or outlier because his experiences were essentially opposite of the general patterns and trends within the major categories of the findings. This notion that the student was a negative case was not evident in the data collected through his individual interview.

After completing member checks at each research site, I returned to the study findings and used students' insights as a lens to revise and refine my analyses. In some cases, I simply revised the language of the findings or added one or two new sentences to better reflect students' perspectives based on the feedback they provided during member checking. In most other cases, I added new paragraphs to the findings to illuminate the caveats and insights students shared during the member checking process. For example, I added a new paragraph to the relatedness findings to reflect a few students' feedback that individualized interactions with teachers only supported their feelings of relatedness when they were paired with genuine expressions of care from educators. Within these new paragraphs, I explicitly stated that the perspectives were gathered during member checking to distinguish them from the original sources of data and analyses. By the end of the process, this member checking added further nuance and complexity to the analyses, which enhanced the trustworthiness of the findings.

Ethical Considerations

This research was conducted in accordance with my own ethical principles and the highest ethical standards in the field to protect the rights and well-being of my study participants. The study was approved by The University of Vermont's Institutional Review Board (IRB), and all research activities were carried out in accordance with the IRB-sanctioned research protocol. All participants were fully informed of research activities and had opportunities to consult with their teachers and parents before enrolling in the study. Participants were required to return an informed consent document that they and their parents signed to enroll in the study and were informed that they had the option to end their involvement at any time during the research without penalty. All collected data were stored in a password-protected folder on my personal computer. The names used throughout this dissertation are pseudonyms to protect the anonymity of participants, and some changes were made to descriptions of the research sites to maintain the anonymity of the participating schools.

Researcher Subjectivity

Because I was the primary research instrument (Creswell, 2013) in this study, it is important to examine my subjectivity as a researcher. Interpretivist researchers believe that "no person can get rid of the subjective and thereby achieve objectivity. Objectivity is viewed as neither possible, nor desirable" (Glesne, 2011, p. 152). Further, Glesne (2011) suggested that "subjectivity [is] an integral part of interpretivist research from deciding on the research topic to selecting frames of analysis" (p. 152). Given the inherent subjectivity of interpretivist research, I will briefly consider my own "Subjective I" (Glesne, 2011) in this section.

I was initially drawn to the topic of personalized learning because it aligns with my own philosophies of education. As an educator at the secondary and postsecondary levels, I attempted to give students as much voice and choice as possible in the classroom to allow them to learn about topics that were personally meaningful. I believed it was important to meet students where they were as people and learners and to account for their interests, motivations, and needs in the educational process. In many ways, I was attempting to give students personalized learning opportunities before I knew there were established theories and practices associated with this concept. Therefore, I was immediately intrigued when I learned of Vermont's movement toward personalized learning through the passing of the Flexible Pathways Initiative and the Education Quality Standards (EQS).

Upon learning about the Flexible Pathways Initiative and the EQS as a doctoral student, I proceeded to investigate the existing literature on personalized learning. In the process, I encountered self-determination theory (SDT) and immersed myself in this body of literature. I was drawn to SDT because it aligned with many of my own beliefs about human nature and needs and had been verified by empirical research over the course of close to 40 years. As I became more familiar with SDT, I began to see significant overlap between it and personalized learning. Because personalized learning gives students increased power to make decisions about their education and enables them to study topics that have personal meaning, I hypothesized that it would support students' basic psychological need for autonomy. I also believed that personalized learning would meet students' need for competence by allowing them to build on their strengths rather than forcing them to address areas of deficit as perceived by educators. Finally, I hypothesized

that personalized learning could meet students' need for relatedness through its reliance on smaller learning communities and more personal interactions among learners and educators.

These beliefs informed my overall study design as I sought to understand students' experiences with personalized learning through the lens of SDT. As the concept of personalized learning remains quite nebulous in the literature and its practice is diverse and largely dispersed across individual initiatives or programs within schools, I determined that further qualitative research would be needed to clarify personalized learning in practice before quantitative methods could be used to test my hypotheses about the relationship between this educational approach and SDT. I decided, however, to use SDT as a framework for my qualitative study, which informed the questions I asked students during interviews and the lens I used to approach my data analysis.

My initial hypotheses about the relationship between personalized learning and SDT, along with my personal favorability toward their educational and psychological assumptions, represented major facets of the subjectivity I brought to the study. To minimize the influence of this subjectivity, I took a variety of steps throughout the research process. In my sampling, I attempted to talk with as diverse a group of students as possible so that I had perspectives from individuals who had both positive and negative experiences with personalized learning. During data collection, I informed participants that I was interested in understanding both their positive and negative experiences with personalized learning. In my analysis, I tried to stay as close to the data as possible to let it reveal its own descriptions rather than imposing my own assumptions and beliefs. I took all the steps that are outlined in the preceding data analysis section to

enhance trustworthiness of my analyses. Throughout the data analysis, interpretation, and writing phases, I was guided by the belief that it was my responsibility to report on the data as fairly and accurately as possible.

Chapter 4: Findings

Chapter Overview

This chapter presents the findings that emerged from the research process outlined in chapter three. It begins with brief overviews and descriptions of the four initiatives at my research sites in which personalized learning was the primary educational approach: The Odyssey program, the Lakeview Personalization Program, the LearnOut program, and the Personalized Learning Center. These descriptions are based on interviews with students, conversations with teachers, and observations of personalized learning environments at each of the three research sites. In subsequent sections, I provide findings related to the two primary research questions that guided this study:

1. How do students perceive their autonomy, competence, and relatedness within the context of personalized learning?
2. How do students describe their feelings of motivation and personal well-being within the context of personalized learning?

The findings are organized around the central themes of autonomy, competence, relatedness, motivation, and well-being and include sub-themes that explore some of the nuances of students' experiences with these constructs.

The Odyssey Program

The Odyssey program is understood as the hub for personalized learning at Arborville High School (AHS) and is accessible to all students who are interested in designing learning experiences around their own passions and interests. The program was started in 2000 by Katherine, who remains the primary educator associated with Odyssey

at the time of this writing. Most Odyssey studies involve some connection to the community, whether it is through an internship or job shadow at a local business or organization, service learning project, or partnership with a community mentor who is knowledgeable in the student's field of interest. Within the Odyssey program, students are encouraged to pursue learning outside the confines of the traditional classroom setting. Prior to the passing of state education rules mandating proficiency-based graduation requirements, students had the option to design an Odyssey study to fulfill elective or subject area credit requirements. With the passing of the Education Quality Standards, students, starting with the graduating class of 2018, will use their Odyssey studies to fulfill the school's proficiency-based graduation requirements rather than earning time-based credits. According to Katherine, close to 75 percent of students at AHS carry out at least one Odyssey study by the time they graduate, with many students participating in multiple studies. Students also have the option of designing their entire high school curriculum through the program.

To become involved in Odyssey, students must propose a study to Katherine prior to enrolling in the class. Katherine reviews the proposals to ensure they are coherent and feasible and uses them to identify community mentors she believes can support the student's interest-based project. She then arranges a meeting between herself, the student, and the community mentor at the beginning of the semester to develop the parameters for the student's learning experience. During these meetings, students explain what they would like to learn through their studies and collaborate with Katherine and their potential community mentors to generate a preliminary structure for their work along with activities and assignments in which the student can engage to learn more about their

areas of interest. The meeting participants also discuss logistics for the studies such as when and where students and community mentors will have their weekly meetings. At the end of these meetings, Katherine asks students and community mentors to review the school's graduation proficiencies and identify some potential performance indicators that the student can work to meet through the proposed project.

Once a basic study structure has been developed, students engage in a variety of activities to advance their studies. Some students are given assignments at their preliminary study meetings, which their community mentors expect them to complete within the week or two following their initial discussions. If students are not given an assignment at the beginning of the semester or are waiting for Katherine to find a community mentor, their primary task is to create a personal website that they will use to document their learning throughout their Odyssey learning experience. To create these websites, most students use WIX or Weebly, which are both free website-building platforms. Students personalize their websites and create spaces for documentation of their learning through written reflections, videos, and images. If they are not working on assignments or research for their studies, students are expected to update their websites and document their learning.

Another ongoing assignment that students must complete beyond the work associated with their interest-based projects is Mindsets for Learning. Each week, students are asked to identify a personal area for growth in a skill or disposition related to independent and self-directed learning (e.g., responsibility, perseverance, and engagement). Katherine meets with each student to discuss the identified area for growth and some strategies they might utilize to improve their skills and dispositions. Students

then work to implement those strategies and return to reflect on their Mindset for Learning the following week. If students feel they have demonstrated sufficient growth in a disposition or skill, they can consult with Katherine and begin addressing a new one. Some students spend the entire semester working and reflecting on just one or two Mindsets for Learning. Students are periodically asked to develop written reflections on their Mindsets for Learning. According to Katherine, the purpose of this ongoing assignment is to promote personal growth and preparedness for independent learning rather than to measure, assess, and judge students.

When students are not working on their websites or Mindsets for Learning, they are either independently completing tasks and assignments related to their interest-based studies, participating in internships or job shadows, or meeting with their community mentors. The days and times that students meet with their community mentors largely depends on their personal schedules. If they are available during the school day, some community mentors meet with students during their scheduled Odyssey blocks either at AHS or somewhere in the community. Some students have primarily interfaced with their community mentors through Skype if that is the only way to access an individual with expertise in the student's area of interest. Other students and mentors meet on weekends if that the only time they are available to get together. A number of students meet with their mentors at some point during the school's Extended Learning Day (ELD), which is scheduled each week to support personalized learning. Instead of regular classes being held during ELD, students have increased time in their advisory groups to work on their personalized learning plans (PLPs), and teacher hold "callbacks," which allow them to provide additional support to students in subject areas covered during the week of classes.

Time is flexible during ELD, which allows some students to meet with their Odyssey mentors in the school building or out in the community.

At the end of each semester, students are required to give a presentation that demonstrates what they learned through their Odyssey studies. These presentations are generally scheduled at separate times during the last few weeks of the semester. The format of the presentations varies depending on the types of studies in which students engaged. Some students give performances if their studies are more skill-based (e.g., learning a language, instrument, or how to cook) while others organize more formal presentations if their projects necessitate such a format (e.g., photography studies or field-based internships). All presentations, however, are required to have some form of audience involvement and follow a basic structure of introducing the study and its goals, sharing what happened during the learning experience, and reflecting on the project's successes, challenges, and connections to the real world. Students generally give these presentations to Katherine, their community mentors, a content area teacher from AHS, and a few of their classmates. After each presentation, Katherine meets with the student, the content-area teacher assigned to their study, and their mentor to assess the student's work over the course of the semester. Collectively, they look at each performance indicator on which the student will be evaluated and provide their assessment of whether the student demonstrated proficiency in those skills. Students are asked to share their reflections on each performance indicator first so that their assessments are not influenced by the adults' evaluations. These assessments are finalized and recorded once meeting participants come to an agreement about whether the student scored "Getting

Started," "Progressing," "Proficient," or "Transferred/Distinguished" on each performance indicator addressed during a study.

The Odyssey program aligns closely with this study's definition of personalized learning. Odyssey is student-driven because students choose to pursue projects and internships through the program that are based on their personal passions, curiosities, and aspirations. It creates partnership between students, teachers, and community mentors as they work collaboratively to develop and refine learning experiences that are responsive to students' interests, goals, and needs. The Odyssey program accounts for students' social positioning by enabling them to pursue learning experiences that are aligned with their cultural values and explore topics such as rape culture and institutionalized racism that are typically not covered in the traditional curriculum but important to a variety of social groups. It also accounts for the broad spectrum of student needs by providing a learning environment that is social and responsive to students' emotional and psychological states and creating opportunities for students who learn best through physical activity to engage in hands-on learning in the community. While all Odyssey studies are aligned with standards and intended to be academically rigorous, students' personal development and growth as independent learners take on equal value and importance within the program as they are encouraged to explore their interests and increase their self-knowledge and skills as self-directed learners.

The Personalized Learning Center

The Personalized Learning Center (PLC) is an initiative at Riverside High School (RHS) that offers students opportunities to design semester- and year-long projects around their personal interests and career goals. The PLC was started in 2013 and was

intended to serve as an environment in which students could incorporate their personal interests and curiosities into their learning and develop their skills as independent and self-directed learners. The PLC is housed in a classroom that has been designed as a 21st century learning environment with couches and combined chair-desks on wheels for comfortable and mobile seating, a few Mac desktop computers, a 3-D printer, and a variety of other materials for students who are interested in pursuing hands-on projects. The space itself has an overall open and fluid feel. There are always at least three teachers in the PLC each block who support students on their personalized projects. These individuals are licensed teachers in English, social studies, and science and can therefore approve students' projects for credit in these subject areas if it is determined that the work has met school and state requirements. Some blocks are also staffed by educators licensed to teach English as a second language and theater arts.

Students enroll in a block of PLC as they would for any other core or elective class and can choose if they want their PLC project to work toward a subject area credit (e.g., science, math, or social studies) or an elective credit. The learning process in the PLC begins with students completing a learning plan, which is intended to help them develop a general outline and structure for their projects. On these learning plans, students are expected to include a list of potential topics and driving questions for their projects, ideas for how they will demonstrate their learning, resources (e.g., books, websites, films, community members, etc.) they can consult to answer their driving questions, plans for how they will engage the community through their projects, goals for the skills and knowledge they hope to develop by undertaking their projects, and a rough timeline of project activities. Students are also asked to indicate on their learning plans if

they intend to earn a core subject area credit or elective credit through their work on their projects. PLC teachers support students throughout the process of completing their learning plans by helping them brainstorm and refine their topics and driving questions, identify resources and community connections, clarify the goals and intended outcomes of their projects, and develop feasible timelines for their project activities. If students have indicated on their learning plans that they would like to earn core content area credit for their projects, teachers will also have discussions with these individuals about whether their proposed work is sufficient to earn a core credit. If not, students and teachers work together to determine the quantity and quality of work that would need to be completed to earn that core content credit.

At the time of this study, there were a few common assignments that all students were required to complete for their projects. The first assignment was a brief presentation that students gave to teachers and peers in their PLC block once they completed their learning plans. During these short (5-10 minute) presentations, students provided an overview of their projects and shared some of the key components of their learning plans such as their driving questions, the goals of their projects, and how they intended to engage with the community. These presentations helped students practice their public speaking skills and worked toward building community through the intentional sharing of students' projects and interests. The second required assignment in the PLC was a narrative in which students described why they undertook their projects and the personal connections they had to their topics. Students wrote these narratives while simultaneously advancing other aspects of their projects such as refining their learning plans or conducting preliminary research on their topics. After completing these narratives,

students were required to write short research papers that provided foundational information on their topics based on credible sources. This assignment helped ensure students did some research and writing for their projects since some were interested in pursuing more hands-on learning experiences within the PLC.

Once these assignments were completed, students pursued a variety of activities to carry out their projects. Some projects were more research-based, and students therefore spent a significant portion of their time in the PLC collecting information from a variety of sources to help answer their driving research questions. As a 1:1 school, all students had personal laptops they used to carry out their research. Other student projects focused more on building or creating a product. These individuals spent some of their time researching the materials and procedures they needed to follow to build their products and the remainder of their time constructing their artifacts. For example, one student who was interested in robotics spent the first part of the semester in the PLC researching the processes and materials he needed to build his own robotic arm. Once he had access to the necessary materials, he used his time to experiment with programming the arm to make intentional movements through a Bluetooth module, an Arduino board, and computer code. Still other projects involved developing knowledge and skills with the support of community mentors. For example, one student wanted to learn American Sign Language (ASL) and met weekly with a member of the community who was fluent in the language. When she was not meeting with her community mentor, this student watched videos and read texts to further develop her knowledge and skills in communicating through ASL.

At the end of the semester, all students in the PLC are required to write a reflection on their projects that describes the progress they made during the term and how they intend to carry their work forward or use their learning to inform academic and career decisions. All students are also expected to develop a presentation that provides evidence of learning from their PLC projects. These presentations take on different forms depending on the nature of the student's project. Students who conduct more research-oriented projects usually put together a Google Slides presentation or poster that offers insight into the new knowledge and skills that they developed during their time in the PLC. Students who carry out more product-oriented projects typically present the material object(s) they have constructed along with some documentation of the steps they took along the way. Students with more performance-oriented projects, such as the student learning ASL, often give demonstrations to showcase the knowledge and skills they learned through their projects. Students give these presentations at the school's Learning Exhibition Day (LED), which happens annually in January and June. During LED, all students in the high school present projects they undertook in their classes to develop proficiency in the school's transferrable skills. Community members are invited to RHS to observe students' presentations during LED. Teachers and community members assess students' presentations using the school's rubric for oral communication skills, and these ratings serve as one element of students' final grades for the class. The other component of students' final grades is the quantity and quality of their work completion over the course of the semester.

It is important to note that although the basic structure and philosophy of the program has remained the same, the educators in the PLC made a couple adjustments to

the learning process the semester after data were collected for this study. For example, they decided to spend less time structuring and scaffolding students' work on the PLC learning plan and eliminated the research paper as a required assignment. These steps were taken after the teachers reflected on the first semester of the 2016-17 school year and decided that these assignments and scaffolds were, to some extent, detracting from students' focus on their interest-based and curiosity-driven projects. In place of these requirements, the teachers chose to focus on having students document and collect evidence of their learning over the course of the semester while advancing their projects. It is possible, then, that students had a different experience in the PLC the first semester of the 2016-17 school year compared with the second semester.

Overall, the PLC aligns closely with this study's definition of personalized learning. The PLC is student-driven in that projects emerge from learners' individual interests and aspirations. It fosters partnership between students and teachers as they work together to develop projects and learning experiences that are responsive to students' interests, needs, and aspirations while also informed by standards and teachers' understandings of the conditions necessary for deep and meaningful learning experiences. The PLC accounts for students' social positioning by allowing them to investigate topics that are important in their lives but infrequently covered in traditional academic curricula. For example, one student who identifies as black was concerned about racial profiling and racism in the criminal justice system and had an opportunity to investigate these issues through his own personal research and conversations with experts in the local community. The PLC attempts to account for the broad spectrum of student needs by starting each class with a physical wellness activity and personal check in. Students are

also allowed to take breaks in the PLC if they feel the need physically, emotionally, or psychologically. While students are held to high academic standards, their growth as independent, self-directed, and engaged learners with a clear sense of their personal interests, strengths, and purposes takes on equal if not greater importance than traditional measures of academic achievement in the PLC.

The Lakeview Personalization Program

The Lakeview Personalization Program (LPP) is a flexible pathways initiative for juniors, seniors, and some second semester sophomores at Lakeview High School (LHS) who are interested in pursuing learning experiences outside the traditional classroom setting. Although still considered a part of LHS, the LPP is housed in a building down the street from the main high school and is a relatively self-contained program. Students who are interested in completing their high school requirements through the LPP must submit an application for enrollment that outlines why they would like to join the program, how they are prepared to engage in independent and self-directed learning, and some interests they hope to pursue through their learning. The LPP offers a morning and an afternoon program, both of which run for three hours each day during the week. At the time of this study, there were 12 students enrolled in the morning program and 9 students in the afternoon program. Beyond their time in the LPP, students are required to either have a job, participate in an internship, or take classes at LHS for a total of 15 hours each week. Of the four programs that were the focus of this study, the LPP is the only initiative that is responsible for providing students with all of their core classes.

The LPP is run by two educators, Michael and Tom, who were in their first year at LHS when research for this study began. Before coming to the LPP, Michael and Tom

each taught for 11 years in schools outside of Vermont. Within the LPP, Michael is primarily responsible for the English and social studies classes while Tom takes the lead in math and science. Mondays and Tuesdays are dedicated to science and history while Wednesdays and Thursdays focus on English and math. Students spend about three hours engaged with each of the four content areas every week. Fridays are largely dedicated to personal and career exploration through structured activities, guest speakers from the community, and field trips. In late October of 2016, Michael and Tom introduced two ongoing initiatives for Fridays to increase the personalization of the LPP. The first initiative was a project called "Share Your Passion," which asked students to teach their classmates a skill in which they had expertise or engage them in a learning activity that was meaningful to their lives. They also created time for "Enrichment" each Friday, which gives students an opportunity to engage with activities related to their interests such as learning guitar, playing chess, or creating art.

Within the core subject blocks, Michael and Tom have attempted to give students as much freedom and choice as possible while still linking their work to content standards and specific academic skills. For the first science assignment of the year, students had the freedom to design a project of their choice. The only requirements for the project were that it was related to science and could be used to demonstrate progress toward a standard from the Next Generation Science Standards. In other classes, Michael and Tom introduce new skills that they want students to develop, provide some whole group instruction on that skill, and then allow students to apply it to a topic of their choice. In social studies, for example, students learned about systems thinking through a couple days of direct instruction and then were asked to apply this type of analysis to an event of

their choice. Students used systems thinking to analyze topics they found personally interesting such as the rise of ISIS, child marriage in India, and the emergence of the two-party political system in the United States. Similarly, students learned some basic statistical concepts in their math class and had an opportunity to apply them by comparing two entities of their choice. For example, one student compared the Toyota Rav4 and Subaru Forester cars along numerous dimensions (e.g., price, gas mileage, trunk space, total estimated cost of repairs over 10 years, etc.) and then made a recommendation about which car to buy based on his analysis of these factors.

While working on these independent projects, students spread out across the various rooms in the LPP building. Each of the six rooms in the building has at least one desktop computer that students use to carry out their research or create products (e.g., essays or presentations) for their projects. Michael and Tom check in with students during this independent work time and provide individualized support and instruction for those who need it. Once students complete their work, Michael and Tom use rubrics that were developed for each academic department at LHS to assess the progress they made toward the identified standards. Students always have opportunities to revise their work on projects if necessary to demonstrate proficiency in the skills and standards associated with their assignments. Because all students in the LPP were graduating on the credit system at the time of this study, their performance on their personalized projects accounted for 15% of their final semester grades. In addition to these projects, they were assessed on their daily learning reflections, habits of work reflections, and attendance.

The LPP fits within this study's definition of personalized learning in a variety of ways. Although teachers are primarily responsible for identifying the broad skills they

want students to develop within particular content areas, students have significant discretion in how they apply those skills and are largely able to pursue projects that are responsive to their personal interests, aspirations, and needs. Therefore, the learning is student-driven albeit to a lesser extent than some of the other initiatives that were the focus of this study. Once students are equipped with a general understanding of particular academic skills, they work in partnership with their teachers to design projects that address their own and their teachers' interests and goals. The LPP also accounts for the broad spectrum of student needs in a variety of ways. For example, a counselor visits the LPP on a bi-weekly basis and engages in whole group sessions with students to try to meet some of their emotional and psychological needs. Additionally, the LPP enables students to work if their families' financial situations necessitate such an arrangement. While academic skills are certainly a point of emphasis within the LPP, the program also aims to foster students' holistic development as individuals by helping them identify their own passions and purposes and cultivate a disposition for lifelong learning.

The LearnOut Program

The LearnOut program is another initiative within LHS that offers students opportunities to personalize their learning. Unlike the LPP, which is a mostly self-contained program, LearnOut is embedded within LHS so that students can pursue personalized learning experiences through the program while earning the rest of their credits through coursework in more traditional classroom settings. The primary way that students personalize their learning through LearnOut is by participating in an internship or independent study related to their personal and career interests. In addition to coordinating internships and independent studies, the LearnOut program offers a variety

of services related to academic and career exploration such as job shadows and career workshops, when professionals from various vocations are brought to the school to speak with students. LearnOut is open to all students at LHS who are interested in accessing its services. It is run by two educators, Sarah and Lauren, who coordinate most of the program's activities.

Students access the LearnOut program for a variety of reasons. Some students have personal interests they would like to explore that are not addressed within the existing curriculum at LHS. For example, one student who had a planned trip to China was interested in learning Chinese so that she would be able to effectively communicate and read signs during her visit. Through the LearnOut program, the student partnered with a teacher in the school who spoke Chinese to develop an independent study that enabled her to meet her personal learning goals for elective credit. Other students access LearnOut's services simply because they are interested in having learning experiences outside of the traditional classroom setting. As one student explained, "I went to Lauren and basically said, 'I want to do something not in school.'" Still other students have a strong understanding of their academic interests but are unsure of how they might translate them into careers they might enjoy. For example, one student knew she was interested in math and science but was unsure of the career in which she wanted to apply her skills. She connected with Sarah in the LearnOut program, who worked with the student to set up a job shadow with an electrical engineer. This job shadow ultimately turned into an internship because the student enjoyed her experience and was interested in applying her math and science skills in a setting outside of school. In these ways, the

LearnOut program enables students to pursue personalized learning opportunities while also participating in more traditional academic classes.

At the time of this study, LearnOut was in the process of transitioning from a credit-based program to one in which students could work toward their proficiency-based graduation requirements through their internships and independent studies. Prior to the 2016-17 school year, students were only able to receive elective credits for internships they pursued through the LearnOut program. They earned these credits by accumulating a specified number of hours in their internships. Students were, on the other hand, able to earn content credit through their independent studies. To receive this credit, they were required to work with a licensed teacher in the specified content area, who helped students develop a summative assessment that aligned with the state's learning standards. Those teachers were also responsible for assessing students at the end of the independent study to determine if their project met the associated standards and could therefore receive content credit.

With state policy mandating that all students, starting with the Class of 2020, graduate through demonstration of proficiencies, the LearnOut program was in the process of developing systems and structures to allow students to work toward the school's proficiency-based graduation requirements through their internships and independent studies. This process opened opportunities for students graduating before 2020 to earn content credit for learning demonstrated through internships. For example, one student who had an internship with an investment firm worked with a social studies teacher at LHS to map his learning to economics standards and determine the evidence that would be sufficient to demonstrate that he had met those standards through his

internship. He was then able to earn a proportional number of credits (i.e., 0.5 credits) based on the work he completed. The process will be similar for students graduating in 2020 and beyond as they will work with core content teachers and community partners to identify the proficiencies they can meet through their personalized internships and independent studies. Core content teachers will then assess whether students' evidence of learning is sufficient to demonstrate proficiency in pre-defined standards.

The LearnOut program aligns with each element of this study's definition of personalized learning. LearnOut is student-driven in that youth themselves actively seek out learning opportunities through the program that are based on their own interests, aspirations, and needs. It fosters partnership among students and educators as they collaboratively design experiences that work toward goals developed by both parties. Indeed, Sarah and Lauren describe themselves as facilitators because they see one of their primary responsibilities within independent studies and internships to be helping students reflect on their experiences and create their own knowledge from those reflections. LearnOut affords students the opportunity to pursue learning experiences and environments that are best suited to the broad spectrum of their social, emotional, physical, and psychological needs. Like the LPP, it accounts for students' social positioning by enabling them to work, if necessary, to help support their families. In many cases, LearnOut's internships and independent studies work toward holistic growth of individual students by allowing them to apply academic skills in out-of-school settings, explore their personal and career interests, and develop the social and cultural capital to pursue their personal and career goals.

Personalized Learning through the Lens of Self-Determination Theory

With these basic descriptions of the personalized learning initiatives at AHS, LHS, and RHS established, the following sections offer detailed analyses of the key themes that emerged in student interviews about their experiences with personalized learning. The findings are organized around the constructs of autonomy, competence, relatedness, motivation, and well-being, which are central to self-determination theory and this study's guiding research questions. The goal of these sections is to provide rich description of how students perceived their experiences with the aforementioned constructs within the context of personalized learning. It is important to note that these findings are based on general patterns in the data and therefore conceal some of the idiosyncrasy of individual students' experiences and the personalized learning initiatives themselves. I have, however, attempted to accurately capture the complexity of the data by presenting the various facets of students' experiences with each construct, exploring distinctions among students' experiences in the four personalized learning initiatives, and presenting the perceptions of individuals who represented "negative cases" or outliers. Through data analysis and member checking, I determined that the findings explored in the following sections represent the best "fit" for the data, similar to factor analysis in quantitative research.

Autonomy

According to self-determination theory (SDT), autonomy refers to individuals feeling an internal perceived locus of causality and a "sense of psychological freedom" via choice over their actions (Reeve, 2012, p. 154). In line with this definition, study participants generally expressed feelings of psychological freedom within their

personalized learning environments. Students believed there were a variety of options they could pursue when it came to the topics they studied, how they gained new knowledge and skills, and how they demonstrated their learning. Some variation did emerge, however, in the degree of psychological freedom students perceived with regard to the topics, processes, and demonstrations of learning.

Many students also suggested they had an internal perceived locus of causality in their personalized learning environments. Students believed they had control over various aspects of their learning and could influence the learning process if they voiced their needs and interests to their teachers. These feelings of autonomy also extended to the school-level as students explained that the personalized programs embedded within the mainstream school environment (e.g., the PLC, Odyssey, and LearnOut programs) allowed them to pursue learning opportunities both within and beyond the traditional classroom setting that aligned with their personal interests, needs, and goals as learners. Some students asserted that these feelings of autonomy contributed to their motivation and learning in school.

Students also noted, however, that certain dispositions and skills were necessary for them to translate their autonomy and freedom into meaningful and fruitful learning experiences that aligned with their personal interests and goals. For example, some students suggested that without self-motivation and self-advocacy, they would not have been able to access the personalized learning opportunities within their schools. Similarly, other students asserted that self-advocacy was critical within their personalized learning experiences to ensure that their activities met their personal needs, interests, and goals. Some students struggled to advocate for themselves and communicate their needs,

which undermined their autonomy and learning in certain situations. Other students confronted challenges with the increased self-direction and responsibility for their own learning that was associated with autonomy in their personalized programs. These findings are explored in greater detail within this section.

Sense of psychological freedom. Within SDT, one component of autonomy is having a sense of psychological freedom. Students' comments across the three schools suggested they perceived a great deal of psychological freedom in their personalized learning environments. When asked how much freedom he felt like he had to make decisions about his learning in the PLC, one student responded, "I feel like I have a lot of freedom. It's like I don't know if they could get any more free with it, basically, and it's actually really awesome how they do it." In response to the same question, a student in the Odyssey program maintained, "Well, you have tons of freedom. You can study just about anything you want as long as it's reasonable and with that study." Finally, students in the LPP suggested, "I think we have a lot of freedom" and "A lot. We do have a lot." These quotations are representative of the general sense of freedom students felt they had to make decisions about their education within the context of personalized learning. Some differences did emerge, however, in the extent of students' perceived autonomy when they were asked to distinguish between the freedom they felt in making decisions about the topics, processes, and demonstrations of their learning. These nuances are explored in further detail in the following sub-sections.

Topic. Students generally believed they had the most freedom to choose the topics of their studies in the PLC, Odyssey, and LPP as these programs were primarily designed for students to learn through their interests. When asked how much freedom he had to

make decisions about the topic of his learning in the Odyssey program, one student replied, "I feel like we have a really good amount of freedom during that. We have the opportunity to take something and decide what we want to learn." In response to the same question, a student from RHS said, "Pretty much you're learning whatever you want. You choose what path you take. If you choose a general topic, you can branch out into other branches of a topic." This student's comment suggests that even if he chose a broad topic at the beginning of his project, he could pursue different learning paths related to that subject as he became more familiar with the material over the course of the semester. Students in the LPP felt similar levels of freedom in choosing the topics of their learning. One student in the program said, "Everything from A to Z. Obviously, you're not allowed to be looking up like porn or stuff about terrorists, but it's like if I wanted to go learn about rocks, I could." While this student's comment implies he felt a broad sense of freedom to decide the topics of his learning, he recognized there were some boundaries constraining the choices he could make. He believed that he could learn about everything "from A to Z" but understood that some topics may be inappropriate to explore within a public school setting. Overall, these quotations are representative of students' general perceptions that they had a significant amount of freedom to choose the topics of their learning across the PLC, Odyssey, and LPP programs.

Process. Students offered more varied responses when asked about the freedom they felt to make decisions about the process of their learning. Some students in the Odyssey program suggested their level of freedom in choosing how they learned was dependent on their community mentors and how they wanted to approach their studies. As one student explained:

> I think there's a little less freedom in that, and that's kind of really up to the teacher you get, the mentor you get and what they want to do. I think that's really based on what the teacher is like. Because if the teacher could be like, this is what I want to teach you, this is how I'm going to teach it to you, well, then some teachers will probably be like, you know, let's do what you want to do – it might be easier to learn it like that. So I think it depends on the teacher and mentor.

For this student and a few others in Odyssey, the community mentors' overall approach to the study played a significant role in their sense of freedom in the learning process. Another student in the Odyssey program suggested that the freedom to make choices about the learning process also varied by the nature of the study. She noted that she has participated in statistics and Italian studies that were structured like actual courses and others that involved more hands-on learning through internships in the local community. In this way, students' autonomy in the learning process varied by study. As another student from Odyssey acknowledged, however, students could take their own learning preferences into consideration when they crafted their study proposals at the beginning of the semester, which therefore offered them some ability to choose the learning processes that were best suited to their individual needs as learners.

Students in the LPP and PLC largely described their autonomy in the learning process as freedom within constraints. These students felt there were some guidelines they needed to follow in the process of their learning but that there was still room to exercise choice. In describing her sense of freedom to make decisions about how she learned in the LPP, one student explained:

> But for the most part, we are usually very independent, and if we do have a group project, it's usually – like right now we have systems thinking, and we can take any history or anything or just study how it could be a system. So I think that's – like loose rules. Math, I feel like we don't even have restrictions, just little guidelines.

As this comment indicates, there were some assignments in the LPP that dictated how students approached a given topic. The student referred to a social studies assignment that allowed individuals to choose any historical event and to perform a systems analysis of the situation, which was a skill they had learned together as a group. Outside of approaching the topic from a systems perspective, students had the freedom to choose how they learned about the event (e.g., through reading, watching videos, listening to podcasts, etc.). Some students in the LPP also noted that this freedom was constrained to some extent because their teachers would probably not allow them to learn entirely through watching videos and would ask them to engage with a more diverse range of media, including text-based materials.

Students in the PLC also described their autonomy in the learning process as freedom within some constraints. One student from the PLC explained his sense of freedom in the learning process in the following way:

> The way you learn in the PLC is pretty much up to you. There are some general – I call them skeleton assignments that everyone has to do just to form the basis for your project. There's a personal narrative, there's a community connection, and there's an annotated bibliography that you have to do. And once you got those done, you can really choose whatever you want. And even within those, there's a

> lot of freedom because you can choose how involved your community contact will be with the projects.

As this comment illustrates, there were some learning tasks that all students needed to complete for their PLC projects. Once students completed these "skeleton assignments," however, they had more freedom to choose how they wanted to pursue their learning. They could choose, for example, how much of their learning would happen with their community contacts who were often experts in their topic areas. Another student from the PLC mentioned that while a number of her peers were learning about their topics primarily through research, she was going to learn about playwriting and theater by drafting her own play and eventually performing it for an audience. This student had the freedom to learn by doing rather than learning strictly through research. In this way, students in the PLC perceived a general sense of freedom in the learning process that was at times bounded by certain guidelines and assignments.

Demonstrating learning. Students across the three personalized learning programs expressed a similar sense of freedom within broad constraints when it came to demonstrating their learning. Students in the PLC and Odyssey programs were both required to give presentations upon completion of their studies and projects. They were given some guidelines for these presentations but still felt they had a variety of choices regarding how they demonstrated their learning. A student from the Odyssey program explained:

> We have a lot of freedom doing that. We can do slide shows, we can do posters, we can make games, do that, and show what we learned. And we can also within

> that, we can teach people how to use stuff and learn how to write stuff. So we've got a lot of freedom doing that.

A student in the PLC similarly asserted, "In the product area, I feel like I have a lot of freedom because you can really create anything because a student created a computer last year. They built their own gaming computer and it was pretty cool." Although students in the PLC and Odyssey programs acknowledged that their presentations generally followed similar formats of explaining why they chose their topics, how they engaged with the process, and what they learned, they felt a significant amount of freedom with regard to the media and products they could use to demonstrate their learning. Their demonstrations could range from showcasing a computer they created to putting on a performance to talking about their research findings.

Students in the LPP described a similar sense of freedom in how they chose to demonstrate their learning. The primary difference between their program and the others was that they were asked to provide evidence of their learning on numerous shorter-term projects and assignments rather than in a culminating exhibition at the end of the school year. Within these shorter-term assignments, however, students still generally perceived freedom in how they could demonstrate their learning to their teachers. When asked how much freedom she had to make decisions about how she demonstrated her learning, one student in the LPP said:

> Complete. Like there's some kids who are making – they're doing hydroponics and growing stuff, and they're building a whole little lamp thing with all the seeds under and all that and then put a tent over it. I'm doing an actual video and a

> poster for muscles and what they do and how to build them and stuff. So I feel like there's no restrictions on how you can demonstrate it.

As with their peers in the PLC and Odyssey programs, students in the LPP could show their learning by creating products such as hydroponic systems or putting together posters and videos that illustrated the knowledge and skills they gained through a given assignment. This freedom did vary by assignment, however, as one student felt there were limited choices he could make beyond the topic itself on an essay for English. Generally speaking, however, students perceived significant latitude in how they could show what they learned through assignments and mini-projects in the LPP.

General learning environment. Students also expressed a sense of psychological freedom in the general learning environments of the PLC and Odyssey programs. Whereas students generally perceived activities within traditional classroom settings to be tightly controlled by the teacher, they felt more freedom to determine their own actions within the context of personalized learning. For example, students in the PLC suggested teacher "patrolling" of the learning environment was generally limited and that they largely had freedom to choose how they used their time during class. As one student explained, "the teacher is not going to come at you and make you do some stuff. It's your – you can make the decision to do the work or you can make the decision to do other things." Students in the PLC felt that, within reason, they could choose to socialize with peers, watch YouTube, or do work for other classes as long as they were making steady progress on and meeting deadlines for their projects. A student from AHS similarly suggested he enjoyed Odyssey's learning environment because "you can…do your own work but also be able to talk a little bit. It's not like – like, 'Do this.' It's more open and

free. I think it's a really kind of chilled-out environment in there." These students perceived a general sense of freedom to direct their own activities within the PLC and Odyssey programs, which supported their feelings of autonomy within these personalized learning environments.

It is important to note, however, that not all students valued this general freedom in the learning environment. One student, who will be described as an outlier at times in this chapter, suggested during the member checking process that he disliked the laid back environment of personalized learning because he felt it encouraged him and his classmates to "slack off." In this way, the student perceived that the general freedom of the learning environment undermined his motivation and ability to make progress on his interest-based project. This student's perspective is important for considering how individuals with varying dispositions and expectations may respond to the autonomy afforded within personalized learning.

Behavior emanating from self. Another aspect of autonomy in SDT is the sense that an individual's behavior emanates from one's self. This component of autonomy implies that individuals feel a sense of control over their activities. A number of students suggested they had this control and ownership over their actions within the context of personalized learning. One individual's comment from the LPP is illustrative of the sense of control and ownership many students felt they had over their learning in their personalized programs:

> I really like that we're able to do the personalized learning, because it's really our education is put in our hands, and I feel like over at the bigger school, it's not set up that way. And I like the fact that I made the choice to come over here, because

> like I said, it's in our own hands, but we can really learn the way we want to. And not only that, but we can learn what we want to the way we want to. And I don't know about anybody else, but that's really how I learn something.

A student at RHS also used the metaphor of personalized learning putting education in his hands when he said, "It's more like you can go to the PLC and learn about what you want, and then you go to another class and learn about what you want. The classes are all trying to keep personalized learning in your hands." These students' assertions that programs such as the LPP and PLC put learning in their own hands implies they had an internal perceived locus of causality because they felt they had control over their education and could influence how they engaged with their learning. Because they had increased freedom to make decisions about what, where, and how they learned, students generally felt in control of their education in their personalized programs.

Voice. Another factor that contributed to students' feelings of autonomy in their personalized learning environments was the sense that they had a voice in the classroom and could work with teachers to create conditions that better suited their needs as learners. A number of students in the Odyssey program, for example, mentioned that when they felt something was not working for them personally with a study, they could talk with their teacher or mentor and make the necessary changes to the learning process. As one student asserted:

> It's definitely different because it's really – you can sort of decide whether what you're doing actually works for you. 'I really don't like how this study is going, and I'm going to talk to Katherine about it and try and alter it a little bit so that it can work more for me.' That's sort of harder to do in other classes.

Students in the LPP expressed a similar belief that they could influence aspects of their learning by voicing their needs to teachers. One student from the program said:

> Even if we're in like a group science or a group history topic, we can still always voice how we think it would work out and if we think that a different way of learning will work a little bit better, we're still always able to voice that to our teachers. And they always try to do their best to try to make it go that way.

Evident within both of these quotations is students' perceptions that they could influence the learning process and environment by voicing their perspectives to their teachers. Students believed that if they voiced a concern or need, teachers would work with them to change aspects of their studies in ways that better supported their learning. This sense of voice contributed to students' feelings of autonomy in their personalized learning environments because it allowed them to exercise some control over how they engaged with their learning.

School-level autonomy. There was also the sense among students that programs such as Odyssey, the PLC, and LearnOut, which were embedded within the mainstream school environment, contributed to greater feelings of autonomy at the school-level. These programs allowed students to pursue personal and career interests if classes on these topics were not offered within the standard school curriculum. When asked about the freedom he felt within his entire school experience to learn about topics that were connected to his personal interests and goals, one student described the diverse course offerings at LHS and then asserted:

> And if it's not in the school building, you can get involved in something at LearnOut, and they can work with you to try and look for something outside of

> school maybe. And so the school has done a good job of making all kind of opportunities for people with all kinds of different interests.

This student became involved with the LearnOut program because he was passionate about literature, writing, and music and wanted to pursue those interests through an internship or independent study that allowed him to learn more about music writing and being a music critic. Although there were not opportunities available within LHS's standard curriculum for the student to develop his skills as a music critic and writer, the LearnOut program enabled him to use technological and community-based resources to engage in learning experiences that worked toward those personally meaningful goals. In this way, the LearnOut program gave the student more autonomy at the school-level to pursue learning experiences that were aligned with his personal interests and potential career goals.

The personalized programs embedded within the mainstream school environment also afforded students opportunities to have more control over how they learned. Students across the three schools expressed strong opinions about how they learned best. Some suggested they were more "hands-on" learners while others asserted they learned effectively through lecture and other traditional classroom practices. A number of students maintained that they learned best through both "real world" and traditional classroom experiences. Programs such as the PLC, Odyssey, and LearnOut offered students more options in the types of learning experiences they could pursue within their school. As one student explained about the Odyssey program, "I think it's great for anybody that struggles in core classes because it's not really what they're looking to do. So yeah, offers a lot of opportunities." A student at LHS similarly described how the

LearnOut program afforded her greater autonomy within her high school program of study to make decisions about where, when, and how she learned. In describing the unique combination of traditional classroom and community-based learning experiences that she fashioned through the LearnOut program, this student said:

> I would still say it's a pretty high classroom to outside-of-classroom ratio. Probably like 75 to 25 percent. But that's what's worked for me. Other students may have a better experience with some other ratio. But I think having that option to not be in a classroom 100 percent of the time has really meant a lot and has helped me as a learner and as a person.

This student acknowledged that the optimal ratio of in-school to out-of-school learning experiences would vary according to individual students and their personal preferences and needs as learners. She did feel, however, that having the autonomy to pursue approximately 25 percent of her learning outside of the traditional classroom setting was important to her development as a learner and as a person. In this way, the LearnOut program supported the student's sense of autonomy within the general school environment by giving her the option to pursue both traditional classroom and community-based learning experiences.

Benefits of autonomy. A few students mentioned that having autonomy within their personalized programs was motivating in and of itself and ultimately supported their learning. One student from the LearnOut program asserted, "I liked being in control, I guess. So being able to do the things that I wanted to do made me want to do more." This same student claimed later in her interview that, "Being able to choose has greatly improved my grades and my interests." Because this student liked being in control of her

own learning, she found the autonomy of the LearnOut program to be motivating and believed it contributed to improved grades in school. A student from RHS also described the PLC's autonomy as motivating and explained how he believed it supported his learning:

> And so I felt like the freedom that I was being given in the PLC was almost making it hard for me to make my own decisions. But I think ultimately once I had picked, it really felt like I had come to this conclusion rather than the teachers tell me okay, well, your project isn't going to work if you do this. And so I definitely would say that there is a sense of autonomy that comes in where I was more motivated to do this now because I made the decision instead of having someone tell me your project isn't going to work. Now I see why. Okay, that was a bad plan; now I'm picking a new plan. And the teachers probably would have come to the same decision much earlier, but I think it definitely was worth it.

This student felt that the autonomy he had to make decisions about his learning in the PLC contributed to his motivation and sense of ownership over his project's direction. While teachers certainly offered suggestions and guidance about the project's scope and feasibility, the student was ultimately afforded the freedom to choose which learning path he wanted to follow. Because he was able to make decisions about the project for himself, he felt more ownership of his work and motivation to carry it out. In some ways, then, the PLC's autonomy allowed the student to learn about project design through experience rather than teacher directives.

Learning through their interests. Students also suggested that they benefitted from the autonomy of their personalized programs because it allowed them to study

topics in which they were interested. With relatively broad discretion to choose the focus of their projects, most study participants opted to learn about topics or skills that personally interested them. A number of students asserted that they did their best work and learned the most when they had an opportunity to engage with topics of personal interest. As one student from the LearnOut program maintained, "And I find that – kind of if you look throughout my work in whatever age, if I was interested in something, the better the work was." A student from RHS described the positive association between his interests and his motivation to carry out his PLC projects work when he said, "And so because I feel interested in the topics, I have more of a sense of motivation to do the work." Another student from the LearnOut program similarly discussed a link she perceived between her personal interests and learning when she asserted, "And when you're interested, I think you'll mostly learning something even if it's really small – a skill how to do something or a really big concept that can impact your whole life." These connections between students' interests, motivation, and engagement are explored further in later sections. It is important to acknowledge here, however, that students believed one benefit of having autonomy within the context of personalized learning was having the opportunity to learn through their interests, which they believed contributed to better work and more learning.

Students also described how the autonomy of their personalized programs and the opportunity to choose their projects helped them develop a clearer understanding of their own interests and the types of educational and career pathways they might want to pursue as they progressed through their secondary school experiences. This clarification of personal interests was particularly evident among students who chose to participate in

internships and other types of community-based learning that afforded opportunities to gain real-world experience in potential fields and professions of interest. As one student from the Odyssey program explained:

> I think everything that I do in Odyssey is necessary to find out what I want and what matches me because like photojournalism is an interest of mine, and I went and did it, and I was exploring the career of photojournalism to see if it did match me and that's what I wanted to do. And I steered away from it because even though I liked doing it, I don't think it was something I could have done as a career, and I think that's a really big part of Odyssey so students don't go into college and they're taking a bunch of classes for something they have an idea that that they're going to do that for the rest of their life, but they haven't really explored it or gotten to know it and see how it fit them. And Odyssey is good for that because you can do it before you're paying money for the classes.

A number of study participants made similar comments in describing how personalized learning helped them better understand that some of their personal interests may not necessarily translate into fulfilling career interests or paths. These students believed it was better to come to that realization in high school rather than college when they would be paying money to explore interests that may not have much utility in their ultimate career choices.

At the same time, the autonomy of personalized learning allowed some students to discover how their academic interests could be translated into potential careers. One student from the LearnOut program, for example, enjoyed her science and math classes in school but was unsure how she could leverage these academic interests in her career

pursuits. After becoming involved in the LearnOut program and participating in an internship with a nanotechnology company, the student developed a deep interest in the work associated with electrical engineering. She asserted that the internship experience "gave me more confidence in choosing my own path." In this way, the autonomy associated with the LearnOut program supported the development and refinement of this student's personal, academic, and career interests.

Self-motivation and self–advocacy. Numerous study participants acknowledged that even though their personalized learning programs offered a variety of options and learning experiences they could pursue, students needed to be self-motivated and advocate for themselves to access these opportunities. The student from LHS who described pursuing about 25 percent of her learning outside of the traditional classroom setting asserted that her motivation and self-advocacy were critical components of her ability to create a learning program that suited her need for both traditional and community-learning experiences. She said:

> I think I have all the freedom that I want. It's just having the motivation and the drive to actually do it. And I think that everyone's more than welcome – more than willing to helping you along the way. It's just reaching out and building those relationships and just speaking your mind of what you want and what you need and where you want to go from here.

Because the LearnOut program facilitated independent studies, internships, and other community-based learning experiences, this student perceived extensive freedom in the choices she could make about how she wanted to learn. The student essentially felt, however, that her freedom and autonomy were contingent on her own motivation and

ability to communicate her goals and preferences to the educators at her school. If she did not have the motivation to seek out these community-based learning opportunities or the ability to effectively communicate her interests and needs to educators, she believed this autonomy would not have been as accessible to her.

Students at AHS also described the importance of self-motivation and self–advocacy within the context of individual Odyssey studies. A number of students suggested self-motivation was essentially a prerequisite for success in Odyssey given the freedom they had to make decisions about their learning. As one student asserted, "Not everybody is a super motivated independent learner, and you have to be to do Odyssey or any program like it, at least in my opinion." A couple students also asserted self-advocacy was an important component of their autonomy within individual studies. Because their teacher and community mentors were involved in the design and implementation of their studies, these students believed they needed to be able to advocate for themselves to ensure that their learning met their personal needs and goals. For students with little experience advocating for themselves, such a responsibility was challenging. As one student explained:

> And really I guess the only downsides would be that it's more self – you have to be an advocate for yourself, and you have to be vocal about things you want. And with shyer students or especially with incoming freshmen who aren't very comfortable in this more high school environment, that can be a little troubling. So the first year is sort of like – it depends on your personality, but it can be – 'I don't want to do this, but I don't want to tell the teacher no, I don't want to do that.'

This student and one of his peers both described studies through which they struggled because they were not able to communicate their interests and needs to their community mentors and teacher. Although they had the freedom to choose the topics they wanted to explore, they had to work with their mentors and teacher, who had their own visions for the studies, to design and carry out the learning process. As one student acknowledged, it was difficult for some students to voice their learning preferences and needs to a teacher because such action was generally discouraged within their traditional classroom settings. These students both felt they did not effectively advocate for themselves and therefore struggled through studies that did not match their personal interests, needs, and goals as learners. In this way, the students' struggles with self-advocacy undermined their autonomy and, to some extent, their learning within these Odyssey studies.

Challenges of autonomy and self-direction. Beyond self-advocacy, some students struggled with the self-direction and responsibility that was associated with their autonomy in personalized learning. With the increased autonomy and control in these programs came a new responsibility for driving and directing their own learning. For some students, this increased control and autonomy presented challenges within their personalized learning experiences. As one student from the Odyssey program explained:

> I guess it could be a challenge because when you're given that sort of control to be like this is how I want my learning to be, it's hard for kids to think about okay, sit down, really think about what do I want to happen for myself. And then communicate that. Because that is hard to do.

Given that teachers typically made decisions about students' learning for them in traditional classroom settings, some individuals found the freedom and responsibility for

directing their own learning to be a challenge. Many students had limited experience designing their own projects and studies and therefore struggled when they were asked to take increased control and ownership of their learning. Because they had more responsibility for directing their learning in these settings, numerous study participants asserted that self-motivation and self–direction were essential for students to be successful in programs such as the PLC, Odyssey, and LPP. They believed that without an internal drive to carry out their projects and push them forward, many students would flounder in these types of settings because of the autonomy and responsibility they had for their own learning.

Indeed, some students described feeling overwhelmed by the freedom they had to make decisions about their projects and the responsibility they had for their learning within their personalized programs. One student described his experiences with autonomy in the PLC in the following way:

> I feel like I have – a lot of the freedom comes as responsibility, so it's the freedom to fail, I feel like, has been mostly my experience, especially this year. Because I was doing a project on drama club, and so it's a really kind of nebulous topic. And there's so much that you can do within that. But almost the freedom was overwhelming because there's directing, there's acting, there's set design, casting – all these different processes that you can learn about, and I didn't know which one I wanted to do. And so the freedom was almost a difficult thing because time management, I had to make sure I was picking my project within a reasonable amount of time. I had to make sure it was something I would be interested in enough that I could continue it throughout the semester…And so I felt like the

> freedom that I was being given in the PLC was almost making it hard for me to make my own decisions.

This student's comment reveals a couple different facets of the challenge associated with autonomy in personalized learning. The first relates to responsibility. Because the student had more control over his learning in the PLC, he felt he would bear more of the personal responsibility for "failure" if his project did not meet his intended outcomes or his teachers' standards. In this way, the student perceived that personalized learning shifted some of the responsibility for "success" and "failure" in the classroom from the teacher to himself. The student's comment also suggests that he found the range of choices available for his project to be a bit overwhelming, particularly given his limited experience designing his own projects. Although the student knew he wanted to undertake a project that would support the development of a drama club at his school, he recognized there were numerous aspects of theater that he could explore. Because he did not have a good sense of how much he could learn about the components of theater within a given amount of time or which topic would sustain his interest over the course of a semester, the student felt overwhelmed by the autonomy in this learning environment. The freedom of the PLC became somewhat immobilizing for this student as he grappled with the extent of project choices available to him.

Competence

Within SDT, competence refers to "The need to be effective in one's pursuits and interactions with the environment" and the "inherent desire to exercise one's capacities and, in doing so, to seek out and master environmental challenges" (Reeve, 2012, p. 154). Based on this definition, study participants largely expressed feelings of competence

within the context of personalized learning as they conveyed high levels of confidence in their ability to achieve their goals and complete assignments associated with their projects. Across the three schools that participated in this study, two of the most common factors associated with students' feelings of competence in personalized learning were the support they received from adults and the flexibility of their assignments, goals, and deadlines.

Given the smaller student-to-teacher ratios in these programs, students generally felt they received the necessary support from adults to be successful in their projects. Additionally, the flexibility of goals, assignments, and deadlines in these programs allowed students to adjust aspects of their projects when necessary to ensure they were achievable and well-suited to their preferences, needs, and capabilities as learners at that moment. Numerous students described how this flexibility enabled them to challenge themselves and push their perceived personal boundaries once they had successfully completed the tasks associated with their initial goals. A few students asserted that they felt significantly more competent within the context of personalized learning than they had in any other classroom setting, where they thought of themselves as "dumb" and less academically capable than their peers.

Although most study participants described feeling competent within the context of personalized learning, some students expressed less confidence in their ability to successfully carry out their projects and achieve their goals. For some students, the lack of structure they perceived within their personalized learning programs undermined their sense of competence as they believed they needed more direction from teachers and community mentors to be successful in their projects. Students in the Odyssey program

described inconsistent access to their community mentors as a factor that made them less confident in their ability to effectively carry out their studies. Finally, one student suggested that the rigid deadlines she perceived in the PLC undermined her feelings of competence because she did not feel capable of completing her work within the timeframe established by teachers within the program. These findings are explored in greater detail in this section.

Adult support. Numerous students across the four programs suggested that adult support contributed to their feelings of competence within the context of personalized learning. For many students, the smaller student-to-teacher ratios and more individualized interactions with educators supported their feelings of competence in their personalized programs. One student described the kind of support he received in the LPP in the following way:

> I need to have not necessarily one-on-one, but I need to be able to have somebody go through it with me. And being able to have that over here, that opportunity, is really cool, because that's the way that I learn and how I learn.

For this student, having individualized support from teachers was critical for his feelings of competence in the classroom because he believed such one-on-one attention was necessary for him to learn effectively. Later in his interview, the student asserted that he felt "super confident" in his ability to accomplish his goals and to complete his projects in the LPP because "if you need help, there's always somebody around." Based on these comments, the smaller student-to-teacher ratio allowed this student to receive more individualized attention in the LPP, which ultimately supported his feelings of

competence because he knew he could meet one-on-one with a teacher if he ever had questions or struggled to understand any aspect of his projects.

Students at AHS and RHS also discussed the importance of adult support to their perceived competence in carrying out their personalized projects and studies. A student from the PLC asserted, "If I ever have any doubts or I'm confident that I won't do it, then I have teachers there who will support me throughout it. And either way, they'll try to get me to where I want to be." This student felt that if he ever encountered any challenges with his project, he could rely on the educators in the PLC to help him realize his personal project goals. Similarly, when asked about how confident he felt in his ability to accomplish his goals and complete his projects in the Odyssey program, a student from AHS replied:

> Very confident. There is the support that I would need there for sure if I needed help and was falling short with my mentor and with Katherine because they're both really happy to help you or adjust a goal. Sometimes you have to step back and make the goal a little bit more achievable and then go for it again.

Beyond illustrating how the student experienced adult support from educators and community mentors, this quotation suggests that the flexibility of the Odyssey program also contributed to the student's feelings of competence in personalized learning. The student knew that if a goal or task was too challenging or unrealistic, he could work with his teacher or mentor to adjust the scope of his project so that it was better matched to his capabilities at that time. In this way, both the assistance from adults and the flexibility of studies supported the student's feelings of competence in the Odyssey program by

enabling him to pursue goals and assignments that he believed were personally achievable.

Flexibility. Flexibility also emerged as an important support for students' feelings of competence in the LPP. As with study participants from the Odyssey program, students in the LPP felt they could adjust their projects and goals when necessary to ensure they were achievable and suited to their academic capabilities. One student described the flexibility of timelines in the LPP as an important component of her sense of competence when she said:

> I feel pretty confident in myself as a learner. The timeframe is always really flexible with what we're doing outside of school and like how we're feeling in our life right now. If we're feeling kind of down and depressed, we'll have a longer timeframe to get something done. If we were feeling happier and more on task, then we'll get that done and can move onto the next project.

This quotation illustrates one way that Michael and Tom attempted to account for the broad spectrum of student needs in the LPP. Rather than imposing rigid deadlines that likely would have exacerbated the anxiety and stress some students experienced in their lives, Michael and Tom allowed for more flexibility in project timelines, which supported students' feelings of competence by accounting for their emotional needs and ensuring they were in affective states that enabled them to learn effectively. Another student in the LPP also addressed the importance of flexibility to his sense of competence in personalized learning when he asserted:

> I feel pretty confident that I can get my goals done because I know the pace I can work at as a learner, and the goals are pretty flexible. So you can say, well, I don't

> think I'm going to be here by this time. And you can write a little note next to it saying I hope to be here, but it's unlikely I'll be here. I might need a little extra time, and that's okay.

Evident within both of these quotations is the important role that flexibility of pace played for many students in their feelings of competence within personalized learning. Students across the three schools acknowledged that they moved at different speeds as learners and suggested that their personalized programs generally allowed them to work at a pace that best suited their individual needs. Whereas students were largely required to move through the curriculum at the same pace as their classmates in the traditional classroom setting, the flexibility of personalized learning enabled them to move through their projects at a pace that helped them feel competent and capable of successfully completing their work.

Pushing perceived boundaries. Students also talked about how the flexibility of personalized learning enabled them to find the appropriate level of challenge for their projects and push their perceived personal boundaries when they felt prepared to do so. Given that they had more say in the goals they set for their personalized studies, many students believed they could design projects that were achievable and well-suited to their perceived capabilities. While discussing his feelings of competence in the Odyssey program, one student explained, "We set our own goals, which is helpful, and I can definitely set goals that are achievable for my standard. And then from there I can go to harder ones." The flexible and personal nature of the goals in the Odyssey program supported this student's feelings of competence because he was able to achieve success with his initial goals and then push himself with more difficult tasks once he felt

efficacious. A student from RHS similarly described being able to set personally achievable goals while challenging himself in the PLC:

> For me personally, I set goals where I know that I can get to just so I don't do something like – if I want build a huge helicopter with a landing pad off the school roof – I couldn't do that. But I like to set goals that are pretty hard to get to, but I know I can get to them.

For both of these students, personalized learning presented an opportunity to feel successful in their pursuits while pushing themselves to the edges of their perceived boundaries. Both students felt they knew themselves as learners and therefore believed they could identify the appropriate level of challenge for their projects and set achievable goals. Once they accomplished those initial goals, they felt they could challenge themselves even further.

Adults supporting appropriate levels of challenge. One student from the LPP acknowledged, however, that some of her peers may not know themselves well as learners, which would make it more difficult for them to appropriately challenge themselves and maximize their personal potential. Based on this assessment, the student asserted that educators played an important role in helping learners identify the optimal level of challenge for their personalized studies:

> I think the learner will either – if they know themselves as a learner, they'll choose something that's just the right amount of challenging. But maybe some people who don't really know themselves that well will choose something that's maybe under their level of completion or over their level of completion, so they'll be struggling, and I think teachers kind of help regulate that.

This individual's perspective again underscores the important role that many participants believed educators had in supporting their feelings competence in personalized learning. Many students enter personalized learning environments without a full understanding of how to appropriately challenge themselves on self-designed projects because they are afforded limited opportunities to self-regulate the demands of their work in more traditional classroom settings. With limited experience in this area, students might pursue personalized projects that are either too challenging or too easy, which could undermine their feelings of competence. The student quoted above raised this exact concern. From her perspective, educators play a critical role in supporting students' competence by helping them find the appropriate level of challenge for their projects and adjusting goals when necessary to best suit their individual capabilities as learners at that moment.

Personalized learning building perceived competence in school. For some students, the competence they felt in their personalized learning environments represented a stark contrast to their perceived academic abilities in more traditional classroom settings. Two students explicitly stated that they believed they were "dumb" and "not smart enough" in the traditional classroom setting because they had a difficult time comprehending class subject matter in the ways it was taught. One student from LPP asserted, "I just feel like when you get into a flexible pathway, you discover how smart you are. Because before, I thought I couldn't do anything and I was dumb." A student at AHS expressed a similar sentiment when she said:

> So my fear of failing kind of came out of the doubt that I wasn't smart enough, and I wasn't good enough, and I didn't have a place in the classroom because I

> didn't really understand that my smartness didn't necessarily have to come out of academic achievement.

Both of these students had negative self-concepts as learners in traditional classroom settings because they did not feel they were achieving at the same level as many of their peers. Both students came to recognize that they were not "dumb," however; they just learned in ways that were not typically offered within traditional classroom settings. For the student from the LPP, having the chance to learn in ways that supported her personal learning needs allowed her to recognize her own intelligence. As this student put it:

> And I feel like before these flexible pathways, I wouldn't have had the confidence to do that because before, I wasn't smart enough. And I feel like if you learn the way you need to and you understand that you are smart, it's just the way that general classes teach you – like you feel dumb for not knowing or passing a test or understanding the homework as well as others.

This student came to recognize how "smart" she was after having an opportunity to learn about topics that were personally meaningful and in a way that matched her personal learning preferences. Without access to learning opportunities that were rooted in her personal interests and suited to her learning preferences, this student likely would have continued to believe that she was "dumb" and incapable of learning. Because she had access to learning opportunities that were well-suited to her personal needs, however, the student felt competent within the LPP and began to develop a self-concept as a confident and capable learner.

Undermining competence. Although few study participants described feeling incompetent in their personalized learning environments, it is important to acknowledge

the factors that undermined students' sense competence in these settings. As was evident in the findings on study participants' experiences with autonomy, students described feeling less competent when they were given most of the responsibility for directing their own learning. Because many students had limited experience designing and managing long-term, independent projects, some found these responsibilities to be overly challenging, which diminished their feelings of competence within their personalized learning environments. When asked about the level of challenge of his project in the PLC, one student responded:

> Too challenging. I mean really, yeah, because you have to find the websites or other resources. It's not – usually in other classes we have a list of websites you can look at. Right now, it's your own, and you've got to be able to read and summarize maybe for your thing. It's like that. So it's really tough, but if you try to work and ask for help, you can accomplish all the goals that you have.

As this quotation and others in the previous section indicate, there were times when students' autonomy undermined their feelings of competence within the context of personalized learning. Because this student was accustomed to teachers providing resources related to class content in more traditional classroom settings, he felt overly challenged when he was given most of the responsibility for locating information related to his personalized project in the PLC. It is also important to note, however, that this student felt he could achieve his goals with support from teachers, echoing other study participants' perspectives on the important role adults played in supporting their sense of competence within the context of personalized learning. Based on this individual's

comment and those of his peers, students required different levels of adult guidance and direction to support their feelings of competence in personalized learning.

Some students in the Odyssey program also mentioned that inconsistent access to their community mentors undermined their feelings of competence at times because they did not know if they were approaching their learning the "right" way. While describing her Odyssey study on cryptography, one student said:

> We were working with a college professor, and we were meeting over Skype once a week. And it wasn't like we had a lot of connection with her throughout the week. We couldn't – I mean we could send her an email, I guess, to clarify anything or ask questions, but I don't know if we did that a lot. Because she would just give us assignments that was a lot of math. There was some of the stuff that we could figure out. And for the most part, we just didn't really know if we were doing things right the entire time. Like we were just kind of going for it, doing a lot of guessing as we did the assignments as to what things meant or what she wanted us to do.

In this case, the remote nature of the student's relationship with her community mentor undermined her feelings of competence in her personalized study. Without a channel for consistent communication outside their weekly Skype meetings, this student felt that she and her classmates were essentially guessing while completing the mentor's assignments. This individual's experience again relates to the broader finding that adults played a critical role in supporting students' sense of competence within their personalized learning environments. Because students felt more competent when they had a knowledgeable adult with whom they could consult when they had questions or

encountered challenges in their projects, limited or inconsistent access to educators and community mentors undermined some students' sense of competence within the context of personalized learning.

One student at RHS also suggested that the pace and perceived rigidity of deadlines made her feel less confident in her ability to carry out her project in the PLC. This student's project focused on how depression affects different parts of the brain. The student suggested she was not very confident in her ability to achieve her project goals and tasks because she did not believe she could accomplish them by the deadlines set within the PLC. As the student explained:

> Because I have a very complicated project. I mean it's the brain. No one can really figure out every single part of the brain because that's what makes us live and breathe and think. It's just so complicated. And I can't learn so much in such a little amount of time.

In contrast to other students in the PLC who perceived deadlines in the program to be flexible, this individual felt constrained by the pace of learning in the PLC. Although it was not evident in the interview if this student advocated for more time to complete her study, she made it clear that the project pacing and deadlines undermined her feelings of competence because she did not feel she could learn the necessary information about the brain within the class's established timeframe. The student also mentioned that her perceived inability to complete tasks by their proposed deadlines made her feel less motivated to undertake the work necessary to complete her project.

The student who can be considered an outlier among this study's participants also provided insight on his lack of competence in personalized learning during member

checking. Whereas most students suggested that the flexibility of projects and assignments supported their feelings of competence in personalized learning, this individual asserted that adjusting project goals and tasks undermined his sense competence because he perceived such action to be indicative of failure. Rather than viewing goal adjustment as a natural part of the learning process, this student perceived revision of project targets and timelines to be a signal of failure, which undermined his feelings of competence in personalized learning. The student also mentioned that educators' claims that "This is what it is going to be like in college and the real world" diminished his feelings of competence. Because he struggled with autonomy and self-direction in his personalized learning program, the student inferred he would also confront significant challenges in college and the real world based on educators' assertions. This student's comments offer further insight into how individuals with different dispositions and outlooks may perceive their competence within the context of personalized learning. They suggest the student's perceived lack of competence in personalized learning was associated to some extent with his relatively fixed mindset about learning more generally.

Relatedness

Within SDT, relatedness is understood as feeling "A sense of belongingness and connectedness to the persons, group, or culture disseminating a goal" (Ryan & Deci, 2000a, p. 64) and "reflects the desire to be emotionally connected to and interpersonally involved in warm, caring and responsive relationships" (Reeve, 2012, p. 154). Based on this definition, students across the three schools generally described feelings of relatedness within the context of personalized learning whether it was with their teachers,

peers, or community mentors. With whom students felt connected varied by the individual and program. Many students felt they developed close relationships with adults in their personalized learning programs and that their teachers had a better understanding of who they were as learners and people than educators in more traditional classroom settings. The Odyssey program represented an exception to this latter finding as study participants suggested strong student-teacher relationships were the norm throughout AHS.

For some students, the individualized nature of their interactions with teachers contributed to the development of strong relationships and mutual connections. The self-contained nature of the LPP supported students' sense of relatedness in this program as the increased time they spent together enabled them to form close bonds with their teachers and peers. Numerous study participants from LHS described the LPP group as a family. Students in the PLC, LearnOut, and Odyssey programs also suggested that they experienced more caring relationships with their teachers in these environments than they had with educators in any other classroom settings. Many students asserted their associations with teachers felt more like partnerships and friendships than the hierarchical relationships characteristic of more traditional classroom settings. Study participants from the Odyssey program also suggested they formed close personal connections with their community mentors through their shared personal interests.

Although many students described feelings of relatedness with their teachers, peers, and community mentors, some suggested they experienced little connection with others in their personalized learning environments. Because students were working on their own independent projects within these settings, some believed there were limited

opportunities to interact with their peers. Some students were also unable to develop the same kinds of close personal relationships with their teachers that many of their peers established. In fact, some students in the Odyssey program described frustrating interactions with their teacher when she offered feedback on their studies or documentation of learning. These types of interactions led some students to feel less connected to their teacher within the Odyssey program. These findings are explored in greater detail in this section.

Individualized interactions. For some students, the individualized nature of their interactions with teachers supported feelings of relatedness within the context of personalized learning. In most of the personalized programs involved in this study, students had least two opportunities each week to conference with educators about their independent studies and projects. These individualized conversations enabled students and teachers to get to know one another on a more personal level. In speaking about his relationships with teachers in the PLC, one student said, "We're more close because during times when we're just talking to each other, we get to know about what we do and what they do and their hobbies, what's going on in their lives." A student at AHS similarly suggested that he felt more connection with Katherine from the Odyssey program than he did with other teachers:

> It's much more connected in the Odyssey program. I feel like it's a lot more personal in the Odyssey program than it is in other classes because it seems like Odyssey, even though she has so many students, it's very one-on-one because every student is doing something different, so it's not like she's just addressing a group. When she's talking to you, she's talking specifically to you about whatever

> it is that only you are doing. Where if you're being addressed in a class, it's the group. Everybody's doing the same thing. So it's a lot more personal and specific.

Both students quoted here described how the individualized nature of their interactions with teachers in personalized learning allowed them to connect with adults on a more personal level than in other classroom settings. In contrast to traditional classroom settings where they were generally addressed as members of a larger group with a focus on teacher-determined content, these students felt engaged as individuals in their personalized learning environments and that they became the primary focus of their teachers' attention. Through one-on-one conversations about their interests and aspirations, students perceived they could develop closer personal connections with their teachers in personalized learning than in more traditional classroom settings.

My teacher "knows me." The individualized nature of personalized learning also contributed to students' feelings that the teachers in these environments had a good understanding of who they were as people and learners. This perception that teachers knew students well was particularly evident in conversations with students in the Odyssey and LPP programs. While describing her relationship with the teacher in the Odyssey program, one student suggested:

> And Katherine just really knows me as a learner, and she works really hard to get to know everyone individually and know the way that they work rather than addressing the greater population in the same way. She's really good, and I feel like she's an easy person to talk to.

A student from the LPP similarly asserted, "Those types of things, it's like teachers really getting to know you as a learner, especially here being such a small group, that's a lot

easier for the teachers to do. But it's like they know me." These quotations are representative of the sentiment many students in these programs expressed about feeling known as people and learners in their personalized learning environments. Through one-on-one conversations about their projects and goals, students suggested that teachers developed a strong understanding of their individual needs and preferences as learners and their personal interests and qualities as human beings. The LPP student's comment also underscores the role that smaller group learning environments played in students' feelings of relatedness as he suggested the small size of the program enabled teachers to get to know students better as learners and on a more personal level.

Individualized interactions and feelings of care. Students from the PLC who participated in member checking raised an important caveat to this finding about individualized interactions supporting feelings of relatedness. A few students suggested that one-on-one engagement did not necessarily make them feel more connected to their teachers. In fact, a couple students mentioned that they tried to end their conversations with teachers as soon as possible because they perceived themselves as awkward and did not feel capable of engaging in extensive and meaningful dialogue with adults. These students further asserted that individualized interactions only supported their feelings of relatedness when they perceived that their teachers genuinely cared for them and could understand situations from their perspectives. These comments indicated that on their own, individualized interactions may be insufficient to support students' feelings of relatedness within the context of personalized learning; they may also require genuine expressions of care from educators and a willingness and ability to adopt students' perspectives.

Self-containment and relatedness. For the students in the LPP, another factor that contributed to their feelings of relatedness with their teachers and peers was the relatively self-contained nature of their learning environment. Whereas students in more traditional learning environments rotate through multiple classes and teachers during the day, LPP students spend the majority of their time in school with the same group of peers and teachers. This increased time together enabled students to develop closer relationships with their teachers. As one student from LPP explained:

> [It's] definitely more personal. More of a personal relationship. But I'm around them, too, for the whole 3 hours I'm here. So I'm not going to one 40-minute class and saying peace out to that teacher until the next day or the day after. It's like they know everything. They know everything about what's going on here with me.

This quotation illustrates the potential benefits of the self-contained student-teacher groupings that are common in some models of personalization (e.g., the Big Picture model). Whereas this student found it difficult to connect with teachers when he saw them for under an hour each day, he felt a more personal relationship with educators in the LPP because he spent his entire school day with them. In this case, the student perceived the LPP's structure of self-contained grouping as a support for his feelings of relatedness.

Familial relationships. Given the increased time they spent together and the personal nature of their relationships, most study participants from the LPP compared their relationships with teachers and their peers to those of family members. Students

likened their connections with teachers to their relationships with parents. While describing her sense of relatedness in LPP, one student said:

> Last year, Heather and Keith were the teachers here and were kind of like our LPP parents. And it's such a personal connection that it feels like they really do care about you, and I think that they really do.

Another student from LPP suggested that when he is working with his teachers in the program, "It's like talking to your mom or dad about homework. They can help you in any way that you need help with." These comments suggest students' relationships with teachers were marked by feelings of care and comfort. They felt that teachers in LPP were responsive to their individual needs and could support them the way a parent provides for a child. The fact that students compared their relationships with teachers in the LPP to those with their parents suggests they were able to establish secure emotional bonds, which is an important element of relatedness within SDT.

These kinds of familial connections extended to relationships among students within the LPP. In describing her relationship with other students in the LPP, one student asserted that "Everyone here treats each other like family and doesn't really have any issues, which I definitely think is good." Another student suggested the following about his relationship with his peers in the program:

> I feel like we're kind of like a small school family, group family – I don't know, it's weird. But they're just always around, and it's pretty cool because I can connect with them better because there's not a lot of people like I'm around in a big school.

This individual's comment again reveals that the increased time students spent together in the LPP was an important factor in their ability to form close bonds with their peers. They were "always around" one another and could therefore develop more personal and familial relationships. This student also talked about how the smaller group size of the program enabled him to develop closer relationships with students in the LPP compared to the larger school environment where he described feeling overwhelmed by the number of people who consistently surrounded him. In these ways, the self-contained and smaller group nature of the LPP supported students' relatedness by allowing them to form close personal relationships and bonds with their peers and teachers.

Altering traditional student-teacher relationships. Although comparisons of their teachers and peers to parents and family members were unique to the LPP, students across the three schools suggested that they experienced qualitatively different relationships with their teachers in their personalized programs than they did in more traditional classroom settings. For some students, their relationships with educators felt more like partnerships and friendships than affiliations marked by authority and subservience, which characterized their interactions with teachers in other classroom environments. One student described her relationship with the coordinators of the LearnOut program in the following way:

> I just walk in their offices and talk to them and – but that's just like a more equal relationship, not like 'I'm the teacher, you're the student, sit down and do your work.' It's more like, 'Oh, how you doing? How's your internship?' So it's a different atmosphere.

This student's participation in the LearnOut program fostered a different kind of relationship with educators than those to which she was accustomed in traditional classroom settings. Rather than being characterized by teacher orders and student obedience, this individual felt she could relate to educators in the LearnOut program on a more equal level, which created a "welcoming and helpful environment" for her to engage with them about her learning. She felt educators in the LearnOut program were more concerned with supporting her internship and learning than handing out directives, which allowed her to connect with them on a more personal level. In this way, the focus on student learning rather than the maintenance of teacher authority contributed to the student's sense of relatedness in the LearnOut program.

Students across the three schools also suggested they experienced more personal relationships with teachers in their personalized learning environments when they compared them to friendships. In describing his relationship with teachers in the PLC, one student claimed:

> The relationship between the student and teacher is now – doesn't feel like student and teacher. I mean it does when you ask for help obviously, but now it almost feels like a friendship because they're really nice, and they actually care about how you're feeling and what's going on with you and stuff like that. And if you ask them to teach something personal, they'll do it. I feel like I have more of a relationship with these teachers than I do with any teacher in the school.

For this student, the interactions he had with teachers in the PLC did not feel like the typical student-teacher relationship. One aspect of his relationship with teachers in the PLC that distinguished it from associations with other teachers in the school was the

genuine sense of care he perceived from these educators. He believed that teachers in the PLC had an authentic interest in his well-being, which made his relationship with them feel like a friendship and ultimately supported his sense of relatedness with the context of personalized learning.

Students at AHS also suggested their relationships with the teacher in the Odyssey program were marked by feelings of care, comfort, and friendship. One student from the Odyssey program described her relationship with her teacher in following way:

> I think it's nice because I kind of feel like Katherine has a really good balance of being your friend and being your teacher, which is really nice because I think it's important to feel comfortable and feel like you can talk to the person especially when you're doing Mindsets for Learning, you get really personal, like you're having trouble at home or something.

This student asserted that Katherine struck an appropriate balance between being a teacher and friend in the Odyssey program, which helped her feel comfortable in the learning environment. This level of comfort was similar to that described by LPP students in their comparisons of their teachers to parents. The student's comment also suggests that the Mindsets for Learning activities contributed to her sense of relatedness in the Odyssey program because it sometimes involved sharing personal aspects of her life that might have been affecting her learning with the teacher. In this way, a structure that promoted reflection and metacognition between the student and her teacher supported this individual's feelings of relatedness within the context of personalized learning.

Limited connection with teachers. While many study participants described feeling close personal relationships with their teachers, others suggested they felt little

connection with adults in their personalized programs. Two students suggested they did not know their teachers in the PLC well and that they felt little personal connection to them. One student asserted, "I don't necessarily know them very well...And I feel like that's part of the problem, that I can't really connect with them. We don't have a very good connection." Unlike some of her peers who developed personal connections with teachers in the PLC through individualized conversations about their interests and projects, this individual suggested most of her interactions with teachers typified traditional student-teacher relationships in that they were primarily focused on the work at hand and ensuring compliance with classroom norms (e.g., putting her phone away, asking to go to the bathroom, etc.). Another student from the PLC described having minimal connection with his teachers when he said, "I mean I don't really know them that well and they don't know me, which is okay and normal. But they seem like great people." As these quotations indicate, a few study participants reported that they did not have strong feelings of relatedness with their teachers in the PLC.

A few students in the Odyssey program suggested they had frustrating interactions with their teacher while working on their studies, which led them to feel less connected to her at times. For these students, the primary source of tension was the teacher's feedback on their websites and related study products, which they felt was "too specific" and "nitpicky." As one student explained:

> Sometimes she'll ask about what you did or sometimes she'll try to give advice – like advice on which direction your website should take. And sometimes that advice is a little annoying…Just because you can definitely tell she has a vision of what she wants it to be.

As this quotation illustrates, the students who described frustrating relationships with their teacher felt she had a clear vision for how she wanted students' websites and products to appear and pushed students to meet her demands. Some students perceived this direction as "nagging" and unnecessary. One student framed this effort to direct students in a bit more of a positive light when he said, "Katherine definitely pushes her students to do the best they can and that sort of stresses some students out, I guess, which creates a little friction." While much of the Odyssey program offered students autonomy and opportunities to direct their own learning, the teacher's efforts to introduce some control into the learning environment were met by resistance from some students, which undermined their feelings of relatedness to the program's primary educator.

Relatedness with peers. As was the case with their sense of relatedness to teachers, students in the PLC and Odyssey program experienced varying levels of connection with their peers in these programs. A few study participants suggested it was easier to talk and connect with their classmates in the PLC than in other classes because they were all working on projects that were based on their personal interests and passions. As one student asserted, "You connect more with your peers when you do that sort of stuff, when you can be creative and talk about things that you're passionate about rather than just math or physics or this book or reading class." The student went on to claim that "There's a thousand times better community in the PLC than in other classes because you get to talk about things you're passionate about." Another student described how he and his peers expressed genuine curiosity about each other's projects in the PLC, which helped foster conversation and the sense that other people had an interest in their work. In this way, the diversity of projects and the personal nature of topics helped foster

feelings of relatedness among some students in the PLC because it allowed them to engage in conversation and connect with one another through subjects that were important in their lives.

Students in the Odyssey program described their feelings of relatedness to their peers in terms of supporting one another with their work rather than through sharing their passions and interests. Although students worked on many different types of projects within Odyssey, a few study participants suggested they engaged in mutual acts of support to help their peers advance their studies. In describing her relationships with students in Odyssey, one student suggested, "I think that I feel pretty connected to the other students, either in terms of they've helped me out with something and I've helped them out with something and it was just nice to have some support on that." In some cases, students supported one another with common elements of their studies such as documentation of learning on their websites or reflections on their Mindsets for Learning. These shared requirements offered students areas of overlap where they could support one another even if the topics and processes of their studies were vastly different in nature.

Supportive environment. A few study participants across the three schools asserted that the general freedom and lower levels of stress and frustration in their personalized learning environments also supported students' ability to connect with and feel related to one another. One student from RHS insinuated that the PLC's more flexible learning environment made it easier for students to develop relationships with one another when he said:

> I would say mostly the relationship is amicable because a class where people aren't all frustrated and angry at the teacher because there's too much structure makes it easier for the students to be more amicable. And so I think there's a good sense of camaraderie amongst the students.

This individual believed that because students perceived more freedom within the PLC and felt less frustration toward the teacher, it was easier for him and his peers to connect with one another and develop more amicable relationships. A student from LHS similarly asserted that the environment of the LPP supported feelings of relatedness within the program because when students had an opportunity to study something they cared about and loved doing, it "makes it much easier to talk to each other because we're all happy, to learn what we want and to follow what we want." These individuals both believed that the autonomy of the PLC and LPP contributed to feelings of relatedness in these programs because they supported a more positive mindset among students when they engaged with one another in these settings.

Limited connection to peers. Although many study participants described having positive and close personal relationships with their peers, some experienced little connection with classmates in their personalized learning environments. Given the individualized nature of the learning in these classes and programs, some students had limited interaction with peers. When asked to describe her relationships with her peers in the Odyssey program, one student said:

> But it all just kind of is a quiet environment, so there's not much talking or socializing except a couple people who always do socializing. But I feel

personally like I just like to go into my own zone when I'm doing work in Odyssey.

For this student, the Odyssey program was not a learning environment that promoted connection to her peers. Because her classmates largely pursued their own individual topics and projects, this student felt it was easy to go into her "own zone," suggesting she had limited engagement with her peers in the Odyssey program. A student from RHS also indicated he had limited connection with his peers in the PLC when he said, "There's a really short time, so you don't have time to communicate with other students as well. So I don't really talk to anyone, so I don't have any relations with them." Because this student was in the PLC for only a half block (45 minutes), he felt there was little time to interact with peers since his classmates were all busy working on their independent projects. In this way, some students felt the individualized nature of projects in the PLC and Odyssey program undermined their feelings of relatedness and sense of connection with their peers in these environments.

Connection with community mentors. Given that Odyssey was the lone program that consistently engaged students with a community mentor, students from AHS were the only study participants who described feeling a sense of relatedness with adults outside the school building through personalized learning. It is important to acknowledge these relationships, however, because some students developed close personal connections with their community mentors through their shared interests, which were often the centerpiece of their personalized learning experiences. One student explained, "…the mentors are very interesting, fun people, especially since they're already interested in what you're interested in. So then you guys can also connect with

that. So it makes it a very, very rich learning experience." Another student in the Odyssey program asserted, "One of my favorite things about Odyssey is the ability to build relationships with your mentors because it just develops connections for you and oftentimes friends then, too." Both of these students established close relationships with their community mentors through their shared passions and interests. Personalized learning connected these students with a caring adult in the community who helped them develop their knowledge and skills in a field that was meaningful in their personal lives. In this way, the Odyssey program's community connections helped support students' feelings of relatedness within the context of personalized learning.

Odyssey students also recounted situations, however, when they felt unable to connect with their community mentors, and this lack of relatedness ultimately undermined their experiences with personalized learning. In some cases, students perceived their mentors' approaches to overseeing their studies to be a bit off-putting. As one student explained, "The mentor was Monica Jones, who was very tough. If you didn't get something done, or if you didn't – she would make you feel bad about it without directly saying anything, and that was a little daunting for me." Because community mentors were not always trained educators and may have had limited experience guiding teenagers through the learning process, some did not relate to students in the most supportive ways. As the quotation above indicates, some of these interactions could provoke negative emotions in students and somewhat undermine the personalized learning experience. In other situations, students simply felt their mentors' personalities did not match well with their own. In describing one of his community mentors, a student from Odyssey said, "He was pretty difficult to work with. He was very opinionated, and

so that can be challenging. Sometimes you just don't get personalities that match well with each other." This student also described another study when he was excited about the subject matter but could not relate to the community mentor or his approach to teaching, which ultimately led him to end the study. These examples suggest that finding the right fit of a community mentor is important in supporting students' feelings of relatedness and ultimately their experiences in personalized learning.

Motivation

Consistent with existing research that draws on SDT (e.g., Hayenga & Corpus, 2010; Wormington, Corpus, & Anderson, 2012), students experienced various types of motivation within the context of personalized learning and the broader school environment. Within their personalized learning programs, most students described feelings of intrinsic motivation as they were largely driven by their genuine interest in their projects, their enjoyment of the tasks associated with their studies, and their curiosity and desire to learn more about their topics. In many of their core subject area classes, however, study participants described more extrinsic forms of motivation as they were primarily driven by grades and a broader interest in doing well in school. Most study participants explained their longer-term and bigger picture motivation in school in terms of their desire to be successful in their lives beyond high school, and the extent to which students had internalized this goal varied by the individual. Some students asserted their primary motivation for doing well in school was to please their parents while others had career goals they personally valued and internalized. Overall, students were motivated by multiple factors within each of their learning environments, but they largely described their motivation as intrinsic within the context of personalized learning and

extrinsic in their more traditional classroom settings. These findings are explored in greater detail within this section.

Intrinsic motivation. The three settings in which students primarily described feeling intrinsically motivated were the PLC, Odyssey program, and LPP because it was in these spaces that students had the greatest autonomy to pursue learning that was aligned with their personal interests. When asked about what motivated them in these settings, students described the sense of enjoyment they experienced while participating in learning activities, having an opportunity to explore their interests, and personal curiosity. One student explained her motivation for her Odyssey study the following way:

> Well, nursing has always interested me, so every week when it's Thursday I get – I'm excited to go see what I'm going to see today or what I'm going to learn about today, and so it's really cool. You never know what's going to be going on and what you're going to see and who you're going to deal with. It's pretty neat.

This student was primarily motivated in Odyssey by her interest in nursing and her intrinsic desire to learn more about the field. She was curious about what she would experience and learn during her time at the medical center, which made her excited to attend her internship each week. The student enjoyed the activities associated with her learning for this study, which fed back into her motivation and desire to continue advancing her knowledge and skills in the field of nursing. This student's comment suggests she was intrinsically motivated within her Odyssey study because she was primarily driven by the inherent satisfaction of learning more about nursing.

Another student expressed similar feelings of enjoyment and curiosity associated with his Odyssey study on astrophysics. Although the student's study was more academic

in nature than that of his peer who used a more applied approach to learn about nursing through experience in a real medical setting, he was personally interested in expanding his knowledge of the mathematical and scientific concepts associated with the field of astrophysics. As the student explained:

> I'm trying to better understand I guess the astronomical phenomenon out in space – better understand the difference between the cosmos and the quantum because that is an issue that's facing physics right now, relativity and quantum mechanics – they can't agree with each other. And those are both fields of study that I'm very interested in. And – although I'm also pursuing learning the math and formulas and just the nitty-grittiness of physics all in all, it's also really fun for me to conceptually explore these really, really interesting topics.

While some students would struggle to find relevance and excitement in learning the math and science of quantum physics, such pursuits were inherently enjoyable for this individual. He suggested that he enjoyed learning the mathematical formulas associated with physics and that it was "fun" for him to explore concepts within the field that he found personally interesting. This student was intrinsically motivated to carry out his Odyssey study because he was innately curious and wanted to better understand the conflicts and issues of a field that personally interested him.

A student at RHS was intrinsically motivated to undertake his PLC project on the spine because it related to a physical condition he had that impacted his daily life. The student's PLC project afforded him an opportunity to learn more about the condition and identify ways to manage the pain associated with it. In describing his motivation in the PLC, one student said:

> The fact that two of the conditions I'm researching, I do have, one of which is actually an issue for me and causes complications with daily life. Being able to learn how I can potentially treat that on my own would be fantastic; to have that knowledge and have the knowledge of what I'm looking into, which for specifically the physical side of it, I'm looking into yoga and Tai Chi. So to see how that can help me in everyday life, to see if I can actually improve my condition with that would be amazing.

In this case, the student was intrinsically motivated to learn about the anatomy of the spine and physical treatment options for back ailments because one of the conditions he was researching affected him personally. The student was driven by an inner desire to better understand his physical condition and alleviate the pain it caused him daily.

Students in the LPP at LHS also described being intrinsically motivated within this self-contained personalized learning environment. As with students in the PLC and Odyssey programs, these students asserted that having an opportunity to learn about topics they found personally interesting fostered their intrinsic motivation in the LPP. One student maintained, "Getting to learn more about the topic that I'm interested in really drives me because it's – alternative medicine is something I really want to pursue as a career and knowing that really helps me get up in the morning." Another student described his intrinsic motivation in the LPP in the following way:

> It's like that feeling you get in the back of your head where it's like a tingly feeling and it won't go away and you know you like this and it's a super-duper happy feeling that you can't get out of the back of your head. And this place made

> me find cars, which made that feeling come into my head, which has made me keep pursuing it and pursuing it and pursuing it.

Once this student identified his interest in cars through the LPP, he became intrinsically motivated to design a program of learning around this passion. The student deeply enjoyed opportunities to explore historical, mathematical, and scientific concepts related to cars, and these experiences instilled a desire in him to continue pursuing learning in these areas. Like the other students quoted in this sub-section, this individual was motivated by a deep personal interest in cars, which drove his desire to continue learning.

Extrinsic motivation. While students generally experienced intrinsic motivation in the Odyssey, PLC, and LPP programs, they mostly described feeling extrinsically motivated in the broader school environment. The most common responses that students offered when they were asked about their motivation in school were that they were motivated by grades, graduating from high school, and being accepted to college. One student's comment from AHS effectively captures the distinction in the type of motivation he felt in the Odyssey program compared to the broader school environment:

> [I'm] definitely less motivated in school. I kind of just – I mean I'm a good student. I do all my work and – but it's more just to meet a deadline and turn it in because it is less independent, so the work I'm doing is not so much about what I'm really interested in as it is just like doing it so that I have a good grade at the end of the semester.

Not only did the student suggest that he was less motivated in school than in the Odyssey program, he also asserted that his primary motivation to complete work was to meet deadlines so that he could earn good grades in his classes. The student claimed that

meeting external demands to attain the reward of good grades took on greater importance in traditional classroom environments than his personal interests. In this way, the student's motivation was externally regulated according to SDT.

This sense that grades were a major motivating factor in settings outside of the PLC, Odyssey, and LPP programs was echoed by numerous students across the three schools. One student at AHS explicitly stated, "I'm definitely a grade-motivated person. I like to get good grades." A student in the LearnOut program at LHS similarly suggested, "I had always tried pretty hard in school because I felt like that was what I was supposed to do, and I wanted to be a student with good grades and all that stuff." When asked about her motivation in the Math Center at RHS, one student asserted:

> I have little to no motivation. The only motivation that I have is the fact that if I don't get a full credit, then I won't graduate and I won't – it's just a big cycle that is just going to suck for me in the end if I don't do it.

As these quotations illustrate, most study participants felt that grades were a major motivating force within their general school experiences. For the last student quoted from RHS, grades, and her perception of how they would affect her ability to graduate, served as the sole motivation for her to complete her work in the Math Center. Beyond grades and how they would impact her credit attainment, the student did not perceive much value associated with her learning in the Math Center. As external demands that served as rewards and punishment, the student asserted that grades were "negative motivation rather than positive motivation," which is why she felt little motivation to do work in the Math Center.

Evident within the RHS student's comment is the belief many study participants held about grades serving as a gateway to high school graduation and successful postsecondary pursuits. In addition to grades, many students described this desire to graduate from high school and to earn a good living as motivation in the general school environment. When asked what motivated him in school, one student at AHS replied, "To get into college and make a living. Because I definitely feel like being successful in school and being successful in college will make me happier in the long run for sure, no matter how stressful it is." In response to the same question, a student at RHS proclaimed:

> I need to get that gosh darn piece of paper at the end of the road, because I've had more than one opportunity to just say, 'Okay, I'm done, I'm going to do Vermont Adult Learning or whatever – just not this.' My absolute – my preferred way of getting school over with is getting my diploma, as I'm sure is the same for many, because having the diploma as opposed to a GED I know is much preferable for employers as well as colleges if I decide I want to go down that road later in life. To have this high school done with and the diploma in hand is what's pushing me forward.

As with many other study participants, this student described graduating from high school and being attractive to potential employers as a primary motivating force in school. He suggested that his motivation to stay in school was largely driven by employers and colleges valuing a high school diploma more than a GED rather than his own. Indeed, he suggested high school was something he wanted to "get over with" rather than being a pursuit he actually enjoyed. In this way, the motivation to be in school

was more external than internal. This was the same student who was intrinsically motivated in the PLC to carry out his project on the spine because it was something that affected his daily life. These comments suggest, then, that the student experienced different types of motivation in the PLC compared to the general school environment with the former feeling more internal and intrinsic and the latter external and extrinsic.

Extrinsic motivation in personalized learning. It is important to note that there were a few students who expressed feeling more extrinsic forms of motivation within the PLC, Odyssey, and LPP programs, which diverged from the larger trend of students being intrinsically motivated in these settings. One student at AHS asserted she was not as motivated by the work in Odyssey as she was by her teacher's insistence that she stay on task. This student explained, "What motivates me most is Katherine nagging at me to get things done." Another student at AHS suggested competition with his peers and impressing community mentors were major motivating forces in the Odyssey program when he said:

> If it's a group study, definitely it's kind of some competition. Because you have your peers you're working with, and we're doing similar things, and it's always my friends that I'm working with. But you are producing similar content, so there is definitely a little bit of competition there. When it's just an individual project, oftentimes your mentor is somebody that is really good at what they do and what they're teaching you about. They're a very credible source, and they're known for the topic, whatever it might be. And so there's definitely this kind of thought that I always have that oh, they're seeing my stuff. So I want it to be good and show

> my best work because somebody that is really good at it is going to be looking at it, reviewing it.

This student asserted that one of his primary motivations in Odyssey was to prove his worth to his peers and community mentors by demonstrating his best work on his studies. Because his mentors were often experts in their fields, the student was motivated to perform well so that he could receive positive judgments from these individuals. According to SDT, this student's motivation would classify as introjected regulation, a form of extrinsic motivation, because it was focused on establishing self-worth in the eyes of others.

Students in the LPP, who at times were intrinsically motivated to carry out projects that were aligned with their interests, also described being motivated by a desire to be successful in the future. For these students, the bigger picture goal of graduating from high school and making a successful living was motivation beyond the enjoyment they experienced with particular projects or learning activities in the LPP. When asked about her motivation in school, one student from the LPP replied:

> What motivates me is I want to do good in life and I want to make sure that I not only make myself proud and my family proud but know that when I grow up, I'm going to be stable, I'm going to have money. Because in my family, my parents were very unstable as young adults and so am I with my sister and I kind of want to be the complete opposite.

As with many other study participants, this student believed that she needed to perform well in school if she wanted to be successful in her life beyond graduation. Although this student described feeling intrinsically motivated to undertake learning related to her

interests in the LPP, she was also driven by a desire to be a more stable young adult than some of her family members. This student had, to some extent, internalized the goal of being successful in life because she experienced instability among her family members first-hand. Given her personal valuing of this goal, the student's motivation could be classified as identified regulation, which is one of the more autonomous forms of extrinsic motivation within SDT. This student represents a prime example of how some study participants experienced intrinsic and extrinsic motivation simultaneously within the context of personalized learning.

Well-Being and Engagement in School

Given that their needs for autonomy, competence, and relatedness were generally met within their personalized learning environments, it is not surprising that many students reported feelings of happiness and enjoyment in these settings. For some students, this happiness extended beyond their personalized learning environments and into their broader school and even life experiences. The two factors that were most associated with students' happiness and sense of enjoyment within the context of personalized learning were having the opportunity to design learning experiences that were aligned with their personal passions, goals, and needs as learners and the relatedness they felt with their peers and adults in these settings. Numerous students suggested that the feelings of happiness and enjoyment they experienced in their personalized programs represented a stark contrast to the stress, boredom, and even depression they felt in more traditional learning environments. Some claimed they would have dropped out of school if they did not have access to more personalized pathways, suggesting these programs played a critical role in keeping students engaged in school and in their learning.

Positive and enjoyable learning experiences. Students across the three study schools largely described having positive and enjoyable learning experiences within their personalized programs. For many students, having the opportunity to learn about and through their passions contributed to the sense of enjoyment they experienced in these settings. In describing the feeling she had while learning in the PLC, one student said:

> Well, when you go into the PLC, you just know what you want to do, and then you kind of research it a little bit, and you're like – you really just feel that light bulb brighter than the sun, and it's a great feeling.

This student's comment suggests that even though she knew what she wanted to study upon entering the PLC, actually investigating the topic further stoked her interest and the positive feelings she had about her learning and experiences in the PLC. A student from AHS similarly asserted that the Odyssey program fostered a personal interest and sense of enjoyment in learning when she said, "In Odyssey, it's even more awesome because I found my voice and my passion in social justice stuff, and I love it. I absolutely love it." Both of these students described positive emotions associated with their time in Odyssey and the PLC as they had "great feelings" and "loved" their experiences in these programs. For these students, having the opportunity to learn about and through their passions contributed to these positive feelings and learning experiences.

Numerous study participants also suggested they enjoyed the process of learning within their personalized programs, and some even described their experiences as "fun." For many of these students, the experiences that were most enjoyable were those that were not associated with traditional classroom learning. For example, one student from RHS asserted that what he enjoyed most about his experience in the PLC was meeting

with community members who were experts in robotics because he felt he learned more from talking with them than he would have in a traditional classroom setting. A student from the Odyssey program also described her enjoyment of community-based and hands-on learning when she said:

> Me and my mentor, Jessica, we go out and we take photos of a lot of different things like nature, animals, and she teaches me about different lighting and things and techniques and editing software, how to play with light, how to play with lines. And it's been really fun.

As with many other students who engaged in internships and other forms of community-based learning through their personalized programs, this individual described the activities associated with her photography study as "fun." The student was learning the principles and technical skills associated with photography and had fun in the process because she engaged in the actual work of a photographer with a community mentor who guided and supported her throughout the study. A number of other students at LHS and AHS who had internships in medical settings expressed this same sense of enjoyment in learning about the social facets of the profession through their interactions with real patients. Through their personalized programs, students were able to engage in deep and meaningful learning in a way that was experienced as enjoyable and even fun.

Enjoying school. Given that most of their school-sanctioned learning happened within the LPP, students in this program described their sense of enjoyment in terms of their overall experiences in school rather than associating it with individual studies or learning opportunities. A number of students in this program asserted that they dreaded

going to school at the main high school but looked forward to coming to the LPP. As one student explained:

> I like coming to school. I really love coming to school and seeing the people here and getting to research things I'm interested in. And I dreaded going to LHS. It was something that I hated, I could not get up in the morning. And I didn't – I don't think that it helped that I would come home so exhausted I would just fall asleep at 3 and sleep for 3 hours and then not get enough sleep, just wake up more exhausted.

Evident within this comment is the significant contrast in the student's experience in the LPP compared with the traditional classroom setting. Whereas the student dreaded going to school when she was enrolled in the mainstream academic program at LHS, she claimed that she loved attending the LPP each day. Based on the student's comment, there were two factors that contributed to her sense of enjoyment in the LPP. The first was that she had an opportunity to learn about subjects that interested her and had meaning in her life. The second was that she valued the time she spent with her peers and teachers in the program. In this way, some of the student's sense of enjoyment in the LPP was rooted in the autonomy she had to study topics of interest and the relatedness she felt with her peers and teachers in the program.

Feelings of happiness. A number of students across the three schools also described their experiences with personalized learning in terms of the happiness it brought them in school. For many of these students, having the opportunity to learn about topics that were personally meaningful contributed to their feelings of happiness. As one student from the PLC explained:

> I personally feel like personalized learning has been the best thing that I could have had. I go to my class every day, and I'm always just thinking about how I'm so happy that I can learn about what I want and how it can really affect my future and how it's going to make me grow in the direction that I want to.

This student described feeling happy in the PLC every day because he had an opportunity to work on a project that personally interested him and supported the pursuit of his career aspirations. The student believed his work in the PLC would help him progress toward his goal of becoming a computer engineer, which contributed to his feelings of happiness in the PLC and school more generally because he had an opportunity to fulfill his personal vision for his own learning and education. A student from AHS similarly described feelings of happiness in relation to the Odyssey program when he asserted that it had "really allowed me to find things that I'm interested in and then get the credits that I need in a way that makes me happy and that I have fun doing, so it's been pretty great." For both of these students, the ability to create an educational program that matched their personal interests and preferences as learners through the PLC and Odyssey program contributed to their feelings of happiness in school.

Students in the LPP also described their experiences with the program in terms of the happiness it brought them. One individual suggested that the "best part" of the LPP is that, "you have any choice that you can possibly think of here…to be able to learn exactly what you need to learn for yourself to feel happy." As with students from the PLC and Odyssey program, this individual believed that having the opportunity to choose the content of his learning supported his feelings of happiness in school. Another student described the happiness she experienced in the LPP in the following way:

> And I feel like these pathways have affected me so much personally and educationally. They make me happy – they make me so happy because anybody can learn anything and it's just awesome because everybody's a community – uh sorry, I just get taken in these little bursts. And I just – I feel like I wouldn't be the person I am today without these because they just opened a door I could probably have never opened even if I had the key in my hand. I just love these programs.

Similar to her peer who dreaded attending school each day at LHS but enjoyed coming to the LPP, this individual suggested that the relatedness she felt with her classmates and teachers and the autonomy she had to learn about personally meaningful topics were critical factors that contributed to her happiness in school. She asserted that she was happy because of the sense of community in the program and the freedom students had to make choices about their learning. The student also suggested she was happy with the person she had become through her participation in the LPP. She believed the program helped to unlock her potential as a learner, which ultimately set her on a course for success not only in the LPP but in life beyond high school. In this way, the LPP supported the student's happiness within and beyond school by helping her find herself as a person and learner.

Stress and boredom in traditional learning environments. These feelings of happiness and enjoyment that study participants described in their personalized programs contrasted the boredom and stress that many students experienced in more traditional learning environments. Feelings of boredom were more prevalent among students at AHS while a number of students from RHS characterized their experiences in traditional classroom settings as stressful. In describing her core subject classes at AHS, one student

suggested, “Because usually in normal classes, we all have to sit down and all follow the same thing, and it gets kind of boring after a while.” Another student from AHS claimed, “We all get bored in class but I think that’s normal.” Indeed, boredom was framed as a normal feature of the traditional classroom experience in many interviews with students who suggested they and their peers were generally disinterested in the subject matter and their teachers’ reliance on lecture as a primary mode of instruction.

This boredom in class led to stress in the learning environment for some students at RHS. In describing his experiences in the Math Center at RHS, one student said, “it puts more stress on me to be around stress, because everybody in that room, you can just tell that they’re stressed and they don’t want to be there.” This student described feeling stressed in the Math Center because his peers were frustrated with the structure of the class and disinterested in the work associated with the curriculum. Given the frustration that pervaded the learning environment, this student felt stressed in the Math Center as well. Other students at RHS talked about how the workload of their core classes and the pressure to earn good grades contributed to their stress in more traditional classroom settings. Although these feelings of boredom and stress were not universal among study participants from RHS and AHS, they were characteristic of many students’ experiences in traditional classroom settings at these schools.

The contrast in emotional well-being between more traditional and personalized learning environments was even more stark for students in the LPP who made the decision to exit the mainstream academic program at LHS and pursue more personalized pathways to graduation. These students largely described their experiences at LHS in

very negative terms, with some suggesting they were depressed and consistently anxious in the mainstream learning environment. As one student from the LPP recalled:

> I did my freshman year and the first half of my sophomore year at LHS, and that was awful. I had a terrible time. I couldn't focus on anything that was being taught. I was just so uninterested in everything that I was learning, especially since I had no say in it. And there was always specific ways that the teacher taught that just wouldn't get through my head, unless I really put all my attention to focusing, then I wouldn't be able to learn anything. And I didn't want to go to school. And I was actually pretty depressed.

As this quotation illustrates, many students from the LPP felt their needs as learners were not being met within the traditional classroom setting. They were largely disinterested in the class content and did not perceive it to be relevant to their lives. They also had a difficult time understanding the material in the ways teachers presented it them and therefore did not feel competent as learners. Some students from the LPP described feeling "brain dead" in the traditional classroom setting and that their learning consisted of "regurgitating what [teachers] just fed you." This sense that more traditional classroom approaches did not match their learning needs contributed to students' feelings of stress, anxiety, and depression in the mainstream learning environment at LHS.

Stress and anxiety in personalized learning. It is important to note that at least one study participant experienced personalized learning to more stressful and anxiety-inducing than traditional classroom settings. During member checking, one individual suggested their experience diverged from the overarching trends explored in this section related to personalized learning and well-being. The student described feeling greater

stress within the context of their personalized program because of the additional responsibility they had for their learning. Whereas their primary responsibility in more traditional classes was to complete the assignments that teachers created, personalized learning introduced new a responsibility for designing their projects and learning experiences themselves. This individual suggested personalized learning essentially doubled their work and responsibility, which contributed to their feelings of stress and anxiety. It is therefore important to acknowledge that personalized learning may be perceived as more stressful for individuals who thrive in more teacher-directed settings and struggle in designing and driving their own learning.

Engagement. Engagement emerged as an important sub-theme related to personalized learning and students' well-being in school, particularly within the LPP. Without access to a more personalized and flexible learning environment through the LPP, it is likely that some of the students in this program would have dropped out of school. Two study participants from LHS explicitly stated that they likely would have dropped out of school if the LPP was not available as an alternative pathway for their learning. As one student explained:

> And these flexible pathways in learning and personalized learning programs give you the opportunity to zone into something that you actually really care about and put effort into something, and actually maybe even start effort that you couldn't start in a different class. And personally, like I don't believe that I could have gone through high school without one because it's either my way or the highway for me.

The LPP offered this student an opportunity to pursue learning that was personally meaningful, and because she cared about the subjects she studied, she put forth effort that she did not exert in other classes. Not only did the LPP engage the student with her learning, but it also kept her connected to the larger institution of school. One of her peers in the LPP similarly suggested he would have dropped out if he did not have the opportunity to personalize his learning:

> If I didn't come here, I probably would be a lot more behind and not even anywhere close as motivated. I would not be – I probably would have dropped out of high school and gotten my GED by now just to make it by. But at the same time, I'm still here, and I'm like – I've gotten this far, I might as well not quit now. Well, this place and the 'whoa moment' and the realization factors that I've had thanks to coming here is like, yeah, I'd be pretty screwed if this place wasn't here right now.

Based on this comment, personalized learning kept this student engaged with the institution of school in a way that more traditional approaches could not, and it helped prevent him from becoming, in his own words, "pretty screwed." Through the LPP and personalized learning, this individual started to find himself as a person and learner, which contributed to his overall motivation, engagement, and well-being. For this student and may of his peers in the LPP, personalized learning was one of the few approaches at LHS that engaged them with their learning and school more generally, which ultimately contributed to greater feelings of personal well-being.

Chapter 5: Conclusions and Implications

> Neither more stringent standards nor more attractive opportunities to learn are more likely to alter their engagement in school until educators and others recognize, accept, and address the circumstances underlying this basic rejection of even being a student in the first place. (Corbett & Wilson, 1995, p. 13)

Chapter Overview

In this chapter, I present the major conclusions drawn from this study of students' experiences with personalized learning. I begin by summarizing the major findings described in chapter four of this dissertation. I then situate the findings within the existing literature on personalized learning and self-determination theory (SDT) and consider the extent to which personalization afforded study participants a different quality of experience than more traditional classroom settings. In the next section, I discuss the particular features of the personalized learning programs involved in this study that supported multiple facets of students' basic psychological needs according to SDT. I then relate the study findings to existing research that has examined students' experiences in more traditional classroom settings and school environments. In the next sections, I consider the implications of the study findings for policy, practice, and future research related to personalized learning. I then discuss the study limitations and close with some final words about the potential role of personalized learning in a rapidly changing world.

Personalized Learning Supporting Autonomy, Competence, and Relatedness

The first question this study sought to answer was: How do students perceive their autonomy, competence, and relatedness within the context of personalized learning? Study findings suggest students generally felt autonomous, competent, and related within

the context of personalized learning although there were some exceptions to this trend. This section briefly summarizes the findings related to the study's first research question.

Generally speaking, students who participated in this study felt autonomous within the context of personalized learning. Students had a sense of psychological freedom as they perceived a breadth of choice in the topics they could study in their personalized learning environments, with fewer options in how they learned about their topics and demonstrated their learning. Students also described having an internal perceived locus of causality (deCharms, 1968; Ryan & Deci 2000b) when engaged in personalized learning as they felt increased ownership and control over their education at both the classroom and school levels. Numerous students believed they benefited from this increased autonomy as it allowed them to learn through their interests and have the experience (both positive and negative) of making decisions about their learning.

Most students also suggested they felt competent within the context of personalized learning. Study participants conveyed high levels of confidence in their abilities to successfully carry out tasks associated with their personalized projects and achieve the goals they developed collaboratively with their teachers. Given the flexibility of their goals and projects, students perceived opportunities to seek out appropriate challenges within the context of personalized learning. If they felt a goal or assignment was too easy, they could pursue more challenging tasks and learning experiences, thereby fulfilling their need to "seek out and master environmental challenges" (Reeve, 2012, p. 154). Personalized learning even contributed to a sense of competence for a few students who suggested they felt "dumb" and "not smart enough" in traditional classroom settings.

Students also perceived a general sense of relatedness with their teachers, peers, and community mentors in their personalized learning environments. These feelings of relatedness manifested in different ways across the four initiatives. Students in the LPP compared their relationships with their teachers to those of parents and their children while many study participants from the PLC, LearnOut, and Odyssey programs described their relationships with teachers as friendships and partnerships. Regardless of the specific comparison, students across the four programs suggested their relationships with teachers were marked by feelings of care and comfort, and many indicated they had stronger connections with teachers in their personalized learning environments than in any other classroom setting. There was some variety in students' sense of relatedness to their peers across the programs. Some students felt they connected with their peers through sharing their passions and interests with one another while others perceived limited relatedness with their classmates because of the independent and individualized nature of the learning environments. Finally, because it was the only initiative that required consistent connection with a community mentor, some students in the Odyssey program described forming close relationships with their community mentors through their shared passions and interests.

While general trends emerged in students' perceptions of their autonomy, competence, and relatedness in their personalized learning environments, it is important to note that the extent to which their basic psychological needs were met was idiosyncratic to individual students. For example, while most students perceived extensive freedom in how they approached their personalized projects, one study participant from the PLC felt constrained by the deadlines and required assignments that

teachers imposed during the semester. These deadlines and assignments in turn undermined the student's sense of competence as she did not feel capable of completing her work within the constraints imposed by teachers. Similarly, while many students perceived closer relationships with teachers in their personalized learning environments than any other classroom setting, others suggested they felt limited connection to those same educators. These cases indicated that students' perceptions of their autonomy, competence, and relatedness varied, sometimes considerably, by the individual.

Personalized Learning, Motivation, and Well-Being

The second question this study sought to answer was: How do students describe their motivation and well-being within the context of personalized learning? Study findings suggest students generally experienced intrinsic motivation, happiness, and enjoyment of learning and school within the context of personalized learning. This section briefly summarizes the findings in relation to the study's second research question.

The majority of students who participated in this study suggested they felt intrinsically motivated within context of personalized learning. They were driven to engage in learning activities by their innate interests and curiosities and the enjoyment they experienced while exploring topics, issues, and skills that were personally meaningful. Personalized learning contributed to a feedback loop whereby students had positive learning experiences, which motivated them to engage in further inquiry in those areas. While most students described feeling intrinsically motivated within the context of personalized learning, there were a few study participants who suggested they experienced more extrinsic forms of motivation. These students indicated they were

sometimes motivated by competition with their peers, a desire to impress community mentors, and their hopes of being successful in life after high school. Although the trend of intrinsic motivation in personalized learning was evident in the data, it is important to acknowledge that students described being motivated by a complex array of factors within personalized learning and their broader school environments.

Study participants described their well-being within the context of personalized learning in terms of happiness and enjoyment of school. Students suggested they had positive and enjoyable learning experiences within the context of personalized learning because they had opportunities to engage with content and develop skills that were personally meaningful and relevant. Some students also pointed to the sense of community within their personalized learning environments as another factor that contributed to their positive experiences. With these positive and enjoyable learning experiences came a sense of happiness for numerous study participants who described feeling this emotion within the context of personalized learning. In these ways, students described feeling a general sense of well-being and engagement within their personalized learning environments.

Personalized Learning and Quality of Experience

The primary research problem identified at the outset of this study was that little is known about the extent to which personalized learning offers students a different quality of experience from more traditional classroom settings. Prior to this investigation, only Rathunde and Csikszentmihalyi‘s (2005a) study of Montessori middle schools examined the quality of experience in personalized learning environments compared to more traditional classroom settings. Using optimal experience (flow) theory as a

framework, they found that students in Montessori schools reported higher affect, feelings of alertness and energy, intrinsic motivation, and flow experience than their peers in more traditional school environments. For the researchers, these findings indicated that the Montessori learning environments did in fact offer students a different quality of experience compared to more traditional classroom settings.

The present study, which used SDT as a framework for the investigation, offers further evidence that personalized learning can contribute to a different quality of experience for students from more traditional classroom settings. Although the present investigation did not seek to make direct comparisons between students' experiences in personalized and traditional classroom settings, the findings provide some insight on this matter. Many study participants described stark contrasts in their comparisons of personalized and traditional classroom learning environments. Whereas students generally felt free and autonomous in their personalized learning environments, they perceived traditional classroom settings to be more controlling. Some students who described feeling "dumb" and "not smart enough" in traditional classroom settings perceived themselves to be competent within the context of personalized learning. Numerous study participants suggested they had closer relationships with the educators in their personalized learning environments than in any other classroom setting. These comparisons alone indicate that many students experienced autonomy, competence, and relatedness differently in their personalized learning environments than they did in more traditional classroom settings.

As predicted by SDT, the satisfaction of students' basic psychological needs contributed to many study participants experiencing intrinsic motivation, engagement,

and personal well-being in their personalized learning environments. Most study participants suggested they felt intrinsically motivated within their personalized learning environments because they were primarily driven to learn by their interest and passion for the topics they studied. In most other classroom settings, students described feeling extrinsically motivated as they were mainly driven by grades, their parents, and postsecondary aspirations. Whereas many students experienced boredom in traditional classroom settings, they described feeling engaged and interested in their work within the context of personalized learning. Numerous study participants also indicated that personalized learning contributed to feelings of enjoyment and happiness, which contrasted the stress and anxiety that some experienced in traditional classroom settings.

Generally speaking, the study findings align with SDT's basic propositions. The personalized learning environments in this study provided students opportunities for choice and self-direction that have been shown to support individuals' sense of autonomy (Reeve, 2012). They afforded optimal challenges and "effectance-promoting feedback," which are well-established supports for competence (Deci & Ryan, 2000b, p. 70). Personalized learning also supported students' feelings of relatedness by replacing the relatively impersonal structures of traditional classroom settings with individualized interactions that promoted more personal connections among students and teachers (Ryan & Niemiec, 2009). With their needs for autonomy, competence, and relatedness generally met, students experienced the intrinsic motivation, engagement, and personal well-being that research has consistently shown to be associated with satisfaction of these basic psychological needs (Deci & Ryan, 2000b; Ryan & Niemiec, 2009; Reeve, 2012).

When contextualized within SDT's broader theories and empirically tested propositions, this study's findings offer preliminary evidence to support Rathunde and Csikszentmihalyi's (2005a) conclusion that personalized learning can contribute to a different quality of experience for students when compared with traditional classroom settings. As Ryan and Niemiec (2009) note, SDT's predictions "concern not only the experience of wellness, but also the quality of people's engagement, performance, persistence, loyalty, and attitudes in a given context" (p. 269). SDT contends that social environments that support individuals' autonomy, competence, and relatedness contribute to better qualities of motivation, engagement, performance, and persistence and are optimal for personal growth and integration (Deci & Ryan, 2000b). In their alignment with SDT's basic propositions, this study's findings suggest personalized learning has the potential to contribute to better overall qualities of experience for students than more traditional classroom settings. Because they are based on a relatively small sample and qualitative methods, however, these findings require further research with larger samples and quantitative methods for verification.

Facets of Personalized Learning and the Student Experience

Beyond examining students' perceptions of their autonomy, competence, relatedness, motivation, and personal well-being, this study also sought to illuminate how different facets of personalized learning relate to students' experiences with this educational approach. Because the term "personalized learning" has been used to describe a broad range of practices in the literature, it is important to identify the particular features of these approaches that contribute to different qualities of experience for students to help distinguish them from one another and more traditional educational

methods. This section considers some of the elements of the personalized learning initiatives involved in this study that were most supportive of students' basic psychological needs. Figure 1 provides an emergent and holistic model of the relationship between these features and students' basic psychological needs, intrinsic motivation, engagement, and well-being.

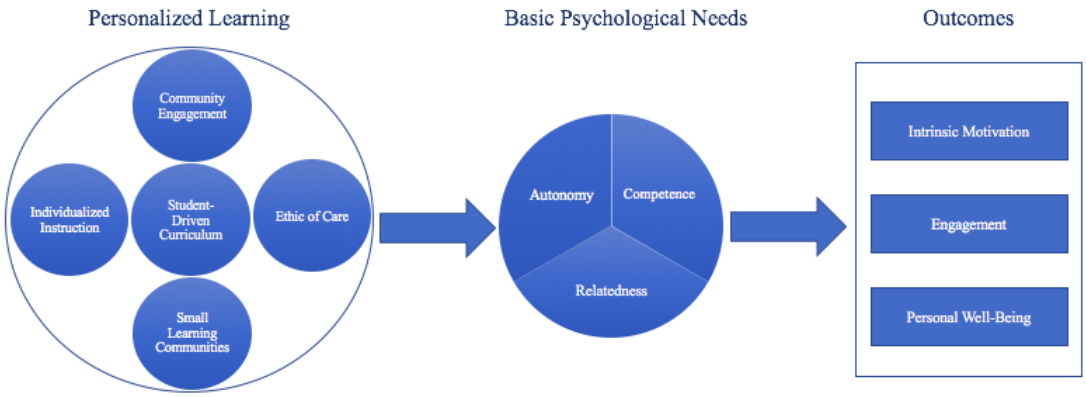

Figure 1: Emergent Model of the Relationship between Personalized Learning and Self-Determination Theory

Student-driven curriculum. Based on this study's findings, one aspect of personalized learning that supported students' feelings of autonomy, competence, and relatedness was the grounding of the curriculum in learners' interests, aspirations, and needs (i.e., student-driven curriculum). Because learning activities were built around their curiosities, goals, and preferences, students had more choice and power to make decisions about what, when, and how they learned in their personalized learning environments than is typical in traditional classroom settings. This increased sense of freedom and control contributed to students' autonomy within the context of personalized

learning. With students' interests, aspirations, and needs as the foundation of the curriculum, teachers became partners in rather than directors of the learning process as they needed to consult with students in the design of learning activities. This shift in traditional teacher-student relationships contributed to students' feelings of relatedness in their personalized learning environments as it enabled them to associate with adults as collaborators rather than subordinates. Finally, the grounding of curriculum in their interests, aspirations, and needs supported students' feelings of competence in their personalized learning environments because it allowed each individual to set optimally challenging goals that were responsive to their unique situations as people and learners and built on their strengths rather than focusing on their weaknesses.

Small learning communities. The smaller size of the initiatives involved in this study was also important in supporting students' feelings of competence and relatedness within the context of personalized learning. Because most of the initiatives involved in this study had student-teacher ratios that were less than 15:1, students had greater access to teachers for individualized support while working on their personalized projects. This ready access to teachers contributed to many students' feelings of competence within their personalized learning environments because they knew had adults to whom they could turn for support whenever they had questions or confronted challenges with their projects. The small size of the personalized learning initiatives in this study also supported students' sense of relatedness because it gave them more opportunities to get to know their teachers and peers on a more personal level. The importance of smaller learning communities was particularly evident in the LPP where study participants suggested the size of the program contributed to the familial relationships they felt with

their peers and teachers. In this way, the small size of the program supported students' feelings of relatedness within the context of personalized learning.

Individualized instruction. The smaller size of programs also enabled more individualized interactions among students and teachers, which was another facet of personalized learning that contributed to students' sense of competence and relatedness in this study. The one-to-one nature of personalized learning afforded opportunities for students and teachers to get to know one another on a more personal level, which helped foster feelings of connection and relatedness. The individualized nature of personalized learning also supported students' feelings of competence. Some students suggested they needed one-on-one support from teachers to fully understand concepts or how to develop new skills while others indicated that the individualized nature of the programs allowed them to approach learning in their own preferred ways and consult with teachers when they confronted challenges or needed additional assistance. In these ways, the individualized nature of personalized learning supported two distinct facets of students' basic psychological needs.

Ethic of care. These individualized interactions were most supportive of students' feelings of relatedness when they were grounded in an ethic of care (Noddings, 1988). Students across the three schools suggested they felt closest to educators who expressed genuine care for them and an authentic interest in their personal well-being. Students described feeling cared for when adults knew them well as individuals and were responsive to the full spectrum of their personal and academic needs. Individualized instruction supported educators' ability to know students as individuals and respond to their needs, but it had to be accompanied by an ethic of care to fully support students'

feelings of relatedness. In this way, grounding personalized learning in an ethic of care was critical in supporting students' sense of relatedness in this study.

Community engagement. A final aspect of the personalized learning initiatives involved in this study that supported students' feelings of autonomy, competence, and relatedness was the connection to the community. Because the LPP, PLC, LearnOut, and Odyssey programs all had systems and structures in place to support engagement with the community, students had a broader range of choices in the learning experiences they could pursue through these personalized learning initiatives. The programs' community engagement structures contributed to students' sense of autonomy by giving them greater freedom to pursue learning activities outside the confines of what is typically available within more traditional classroom and school settings. Having the choice to learn through an internship or with a community mentor contributed to some students' sense of competence by giving them opportunities to pursue hands-on and applied learning experiences that were better suited to their needs and preferences as learners than those usually offered within traditional classroom settings. These community engagement structures also supported students' feelings of relatedness by partnering them with adults who, in most cases, shared an interest or passion. Some students in this study felt they developed close personal connections with their community mentors through their shared interests, which supported their feelings of relatedness in personalized learning.

Varying features of personalized learning. Based on this analysis, some of the practices and structures from the personalized learning programs in this study may contribute to different qualities of experience from initiatives that have been labeled "personalized" in the literature. For example, the Bill & Melinda Gates Foundation's

(2014) definition of personalized learning as an approach in which "Teachers play an integral role by designing and managing the learning environment, leading instruction, and providing students with expert guidance and support to help them take increasing ownership of their learning" implies that teachers maintain most of the control over what and how students learn (p. 2). Therefore, students would likely perceive less autonomy in these types of personalized learning environments than those examined in this study, which would contribute to a different quality of experience. Similarly, community engagement structures are not mentioned as components of any of the nine schools that participated in Bingham et al.'s (2016) study of technology-mediated personalized learning. Students at these schools may therefore perceive less choice in the types of learning opportunities they can pursue, which again could undermine their sense of autonomy and the quality of their experience in school.

Distinguishing types of personalized learning. These analyses suggest that, moving forward, efforts should be made in the research literature to further distinguish the different types of personalized learning and the practices and structures most often associated with each approach. Labelling a broad range of practices, structures, and philosophies as "personalized learning" overlooks the fact that diverse approaches to personalization likely contribute to different qualities of experience and outcomes for students. A typology of personalized learning would enable researchers to more clearly identify how different practices and overall approaches to personalization relate to student experiences and outcomes. This typology could be used to begin identifying the approaches to personalized learning that have the greatest potential to contribute to desired student outcomes.

Personalized Learning and Student Voice Research

The final aim of this study was to develop a better understanding of students' perceptions of personalized learning. Although an extensive body of research has examined students' perceptions of their experiences in more traditional school environments (Cook-Sather, 2014), this study was one of the first to make students' experiences with personalized learning the primary unit of analysis. With an increasing number of schools adopting more personalized approaches to teaching and learning, it is critical to understand how students experience these reforms because "Effective implementation of change requires participation by and buy-in from all those involved, students no less than teachers," and "Students have unique knowledge and perspectives that can make reform efforts more successful and improve their implementation" (Levin, 2000, p. 156).

The findings from this study suggest that personalization can support the types of learning environments that students have expressed valuing in the student voice literature for more than 20 years. After each engaging in more than a decade of research on students' perceptions of their schools, Rudduck (2007), Smyth (2007), and Yonezawa (2015) all found that students desire learning to be connected to their personal interests, goals, and lives outside the classroom. This study suggests personalized learning fulfilled this desire by giving students opportunities to study topics and engage in experiences that were directly related to their personal interests and aspirations. The autonomy that study participants had to choose the topics and content of their personalized learning experiences met students' calls within student voice research for opportunities to make decisions about and have ownership of their learning (Rudduck, 2007; Smyth, 2007).

Yonezawa (2015) and Smyth's (2007) work also indicated that students desire their learning to be based on real-world problems and examples and promote active community involvement in their schools. The personalized learning initiatives involved in this study supported those interests by providing students opportunities to participate in real-world learning through internships and related community-based experiences. In many ways, the personalized learning environments in this study afforded the types of "individualized and flexible high school experience[s]" for which students have called over decades of research in this area (Yonezawa, 2015, p. 49).

Implications for Practice

Beyond suggesting that personalization can support the types of learning environments that students generally value, student perspectives from this study are useful in considering how to "make [these] reform efforts more successful and improve their implementation" (Levin, 2000, p. 156). By sharing some of their struggles with personalized learning, along with the aspects of this approach that supported their basic psychological needs, motivation, and well-being, study participants helped identify some important considerations for effective implementation of personalized learning. In this section, I briefly discuss the implications of the study findings for the practice of personalized learning.

Autonomy and structure. Similar to existing research on autonomy support in general classroom settings (Jang, Reeve, & Deci, 2010), this study's findings indicate that it is imperative for educators in personalized learning environments to offer students freedom and choice while also providing the necessary structures and scaffolds to support their learning. Although students generally valued opportunities to make decisions about

their learning within their personalized programs, some struggled with certain aspects of their autonomy. For example, some study participants found it challenging to direct their own learning because they had limited experience with this responsibility in more traditional classroom settings. Other students felt incapable of effectively advocating for themselves within the context of their personalized projects, which undermined their personal goals for their studies and sense of autonomy. Because students are generally granted little autonomy in traditional classroom settings, many are not prepared to take increased responsibility for their education within the context of personalized learning. It is therefore imperative for educators in personalized learning environments to have structures and scaffolds in place to support students' feelings of competence in the transition from teacher-directed to student-directed learning.

Individualization and isolation. Another important consideration for teachers in the practice of personalized learning is building a sense of community to support feelings of relatedness and connectedness among students in these settings. With its focus on individualized projects, personalized learning has the potential to isolate students from one another as they work independently to advance their own studies. Indeed, some students who participated in this study suggested they felt limited connection with peers in their personalized learning environments because they and their classmates were focused on completing their unique and individualized projects. The PLC attempted to counter this potential for isolation by creating time for group check-ins at the beginning of each block and requiring students to present information about their projects early in the semester. This study's findings suggest these and other steps should be considered in

personalized learning environments to build community and increase feelings of relatedness among students.

Community connections. A final implication of this study for the practice of personalized learning relates to the involvement of community mentors. Although not all programs that participated in this study required consistent involvement of a community mentor, the findings suggest this practice has the potential to support students' sense of relatedness by connecting them with an adult who shares similar interests and passions. Involving community mentors also gave students opportunities to engage in more varied learning activities (e.g., internships, field-based experiments, and weekly photo shoots in the community) that in some cases were better suited to their learning preferences and needs and supported their feelings of autonomy. For these reasons, involving community members to support students' personalized learning activities could be a worthwhile practice for new and existing personalization initiatives. There were some situations, however, when students' inconsistent access to community mentors, due to distance or scheduling issues, diminished their feelings of competence. In other cases, students simply did not mesh well with their community mentors, which undermined their feelings of relatedness and ultimately their experiences with personalized learning. Therefore, educators in personalized learning environments will need to consider how they will consistently monitor and manage relationships with community members and support students in situations when connections with these mentors are interrupted or interfering with their learning and well-being.

General teaching practice. This study's findings can also help inform curricular and instructional practices in more traditional classroom settings. Many of the structures

and practices from the personalized learning initiatives in this study that supported students' autonomy, competence, and relatedness could be adopted within more traditional classroom settings. For example, the choice students had in the topic, process, and demonstration of their learning provided them a sense of psychological freedom and contributed to their feelings of autonomy in their personalized learning environments. Given this finding, teachers in more traditional classroom settings might consider affording students a similar range of choices in their work toward mastery of pre-defined content standards. Indeed, students' personalized projects in the LPP and Odyssey programs were tied to specific content area standards.

Another feature of the personalized learning environments in this study that could be adopted within more traditional classroom settings to support students' competence and relatedness is individualized instruction. Although not practical in all situations, there are certainly many ways that teachers could develop projects and activities that allow students to engage in individual and small group inquiry over extended periods of time. This study suggests such practices could support students' competence by allowing them to work at a more personalized pace and receive the type of one-on-one instruction that best promotes their learning. Study findings also indicate that individualized instruction might contribute to students' feelings of relatedness within traditional classroom settings by giving them increased opportunities to interact with teachers on a more personal level.

Policy Implications

This study also has implications for educational policy. The schools involved in this study made intentional efforts to develop structures and policies that supported personalized learning for students. These efforts were supported by policy at the state

level, which aimed to provide students with more flexible pathways to high school graduation. In this section, I briefly consider the implications of the study findings for policy at the school, district, and state levels.

School and district-level policy. The findings from this study suggest schools and districts would be well served by making personalized learning opportunities available to all students. The personalized learning initiatives at the three study schools allowed students to step outside the constraints of traditional curricula and classroom settings to pursue learning opportunities that were aligned with their personal interests, learning preferences, and career goals. A broad range of individuals accessed these personalized learning opportunities, from high-achieving students who intended to pursue careers in astrophysics and linguistics to those who had experienced little academic success in traditional classroom settings and were unsure of their career goals. Personalized learning enabled the former group of students to pursue projects and experiences that supplemented and extended their learning in traditional classroom settings while helping many students in the latter group access and find a joy in learning that had been elusive in more traditional classroom settings. Personalization served as one potential mechanism to engage students, particularly those whose needs were not met in traditional classroom settings, with their learning.

The findings do not necessarily support the idea, however, that all schools should transition to entirely personalized models. Numerous study participants suggested they learned well in traditional classroom settings and enjoyed the subject matter addressed within the standard curriculum. While personalized learning afforded these students opportunities to pursue different kinds of learning experiences (e.g., self-directed,

community-based, etc.) and explore interests outside the standard curriculum, they did not necessarily want their entire high school experience to be personalized in this way. The initiatives that were embedded within the schools (e.g., the PLC, Odyssey, and LearnOut program) enabled these students to pursue a combination of personalized and more traditional learning experiences that best suited their individual interests, needs, and goals while the LPP offered students who had little interest in traditional classroom learning an alternative pathway through high school that was mostly personalized. This study therefore suggests that districts and schools would be well served by creating systems and structures that allow students to pursue the degree of personalized learning that best suits their interests, needs, aspirations, and learning preferences.

In developing these systems and structures, schools and districts will need to consider how their graduation policies both facilitate and constrain opportunities for personalized learning. Some study participants who were graduating on the credit system felt personalized learning was inaccessible to them during their first couple years of high school because of the courses they needed to take to fulfill school requirements. Although these students may have benefitted from engaging with personalized learning early in their high school experiences, they believed school requirements precluded them from pursuing these opportunities. Similarly, the proficiency-based graduation requirements that AHS, LHS, and RHS developed for the graduating class of 2020 and beyond had implications for personalized learning. Broader proficiency-based graduation requirements supported greater opportunities for personalized learning while more narrow and content-specific proficiencies relatively constrained avenues for personalization. These emergent findings from interview and observation data suggest

districts and schools will need to consider how their graduation requirements either support or restrict opportunities for personalized learning.

State-level policy. With the recent passing of the Every Student Succeeds Act (ESSA), states have been given increased power to design their own accountability systems that inform teaching and learning at the local level. States are responsible for determining accountability goals (e.g., proficiency scores on standardized tests, graduation rates, etc.), accountability indicators (e.g., measures of academic achievement and related outcomes such as student engagement and postsecondary readiness), and plans to improve outcomes for schools in the bottom five percent of performance in the state or schools with high dropout rates (Klein, 2016). This study suggests states would be prudent to account for personalized learning in the design of their accountability systems. For example, the present study indicates that personalized learning might be an effective intervention in schools that have been identified as in need of improvement because of high dropout rates. Two students who participated in this study explicitly stated that personalized learning is what kept them from dropping out of school. Other students described the feelings of enjoyment, happiness, and intrinsic motivation they experienced while engaged in personalized learning. This educational approach may therefore serve as a useful intervention within state accountability plans to keep students in school and connected with their learning.

This study also makes clear that states should consider how they will afford districts, schools, teachers, and students the flexibility required for personalized learning. If students are to personalize their learning, they must have the freedom to pursue learning outside the confines of traditional classroom settings and academic disciplines.

In this regard, standardized tests and Carnegie Units (i.e., credit hours) are not conducive to personalized learning. Therefore, states interested in creating the necessary conditions for personalized learning might follow Vermont's lead in transitioning to proficiency-based systems of assessment, which allow students more flexibility in how they develop and demonstrate mastery of their schools' learning standards. Without the flexibility of proficiency-based assessment and related policies, opportunities for students to personalize their learning will remain limited.

Implications for Future Research

Given this study's relatively small sample size and its use of qualitative methods, its findings are not generalizable beyond the research sample. The study does indicate, however, that it would be worthwhile to further investigate the relationship between personalized learning and SDT using quantitative methods. Specifically, instruments from SDT (e.g., The Academic Motivation Scale and the Learning Climate Questionnaire) could be used with larger samples of students to make comparisons between their feelings of autonomy, competence, relatedness, motivation, and personal well-being in personalized learning environments and more traditional classroom settings. This research would offer evidence to either refute or support this study's finding that personalized learning can contribute to a different quality of experience for students when compared with more traditional classroom settings.

While it is important to understand the extent to which personalized learning offers students a different quality of experience than more traditional classroom settings, it is also critical to assess its relationship to student outcomes. Most stakeholders who are operating within the current standards-based, accountability-driven policy landscape are

likely interested in understanding the relationship between personalized learning and academic achievement (as measured by standardized tests). Because personalized learning aims for broader and more holistic development of individual students, however, standardized test scores are not necessarily the best measure of the approach's relative success or shortcomings. Instead, more longitudinal data on students' postsecondary outcomes (e.g., postsecondary continuation rates, college graduation rates, and general life satisfaction) would offer better insight on how personalized learning compares with more traditional approaches in promoting socially desirable educational outcomes.

This study does, however, illuminate some challenges in quantifying the impact of personalized learning on student outcomes. Three of the four personalized learning initiatives that were involved in this study were embedded within their broader school environments. Students pursued personalized learning opportunities through these programs while also taking classes within more traditional classroom settings. For most students, personalized learning represented a relatively small percentage of their overall experiences in school. Therefore, it would be difficult to distinguish the impact of personalized learning on these students' secondary and postsecondary outcomes from the myriad other variables that contribute to these outcomes. Given this challenge, researchers aiming to assess the impact of personalized learning on student outcomes might first focus on school-wide models of personalization, such as Big Picture Learning, in their comparisons with more traditional learning environments. Focusing on these school-wide models of personalization would offer the most interpretable evidence of how personalized learning impacts student outcomes in comparison to more traditional school environments.

Another promising avenue for future research in this area is using narrative approaches to obtain a deeper understanding of individuals' experiences with personalized learning and the potential benefits of this approach. Numerous students who participated in this study had unique and important stories to tell about the role that personalized learning played in their lives, particularly in their self-concepts as people and leaners. These individual stories were somewhat lost, however, in the present study's attempt to identify common experiences with personalized learning across a larger group of students. Future research using narrative approaches would contribute to a deeper understanding of how individuals with unique backgrounds, interests, and aspirations engage with and experience personalized learning. By seeking out the stories and perspectives of adults who engaged in personalized learning as high school students, research using narrative approaches could also offer some insight on the longitudinal outcomes associated with this educational approach.

Limitations

As with all research that uses a case study approach, the findings from this study are not generalizable beyond the programs involved in the research. Each program was embedded within a unique context that likely factored into students' experiences with personalized learning. For example, the Vermont context is unique in and of itself as a mostly rural state with a predominantly (about 95%) white population and history of progressive politics and educational reforms. High school students in Vermont have different life circumstances and live in disparate social environments than youth in large urban communities. These differences in context could contribute to disparate experiences with personalized leaning among students in these social environments. The

participating research sites were also relatively unique within Vermont as they had been engaged with personalized learning and student-centered reform longer than most schools in the state. Therefore, study participants may have had different experiences with personalized learning than other students in Vermont. Given these contextual considerations, the findings from this study cannot be generalized beyond the participating research sites.

Another limitation of this study is that the findings were ultimately based on a convenience sample. Although I intended to purposefully stratify my sample to involve participants with a broad range of experiences with personalized learning, students ultimately had the option to choose if they wanted to participate in the study. Some students who were initially invited to participate in the research because of their unique perspectives elected to not enroll in the study. Therefore, the final study sample may not be fully representative of the diverse range of student experiences with personalized learning. It could be the case, for example, that only students who had positive experiences with personalized learning decided to enroll in the study. Given the study's reliance on a convenience sample, the generalizability of its findings is limited.

A related limitation of this study is the relative racial and cultural homogeneity of the study participants. The final study sample reflected Vermont's broader racial demographics as a large majority of students who participated in the research identified as white. Most participants lived in low- and middle-income, rural communities, with some residing in more urban neighborhoods. Given the homogeneity of the sample, study findings cannot be generalized to more racially and culturally diverse student populations. Students of color may experience personalized learning differently based on

their unique social positioning, cultural values, and lived experiences in school and the broader society. Therefore, future research on students' experiences with personalized should involve participants of diverse racial, ethnic, cultural, and socioeconomic backgrounds.

A final limitation of the study is that I entered the research with a pre-defined framework for the investigation. By using SDT to inform the development of my research questions, interview questions, and data analysis, I significantly limited the potential descriptions and explanations of students' experiences with personalized learning that could have emerged from the study. It is certain that I would have come to a disparate set of conclusions if I approached the research with a different theoretical framework or entered the study without a guiding theoretical perspective. Therefore, the present study represents just one interpretation of students' experiences with personalized learning among many.

Conclusion

This study was primarily concerned with understanding how students experience humanistic approaches to personalized learning because experience is central to the educational process (Dewey, 1938; Ryan & Niemiec, 2009). Each experience students have in school shapes their dispositions toward and engagement with future learning opportunities. When learning environments are misaligned with students' needs, interests, motivations, and aspirations, there is an increased likelihood that students will have mis-educative experiences, which have "the effect of arresting or distorting the growth of further experience" (Dewey, 1938, p. 25). If, on the other hand, learning environments are designed to be responsive to students' unique qualities and characteristics, there is a

greater chance that they will contribute to educative experiences that foster future growth and learning.

For Dewey (1938), who is worth quoting at length for his insightful commentary on experience and education, developing a disposition toward growth and learning was one of the most vital aims of the educational process:

> The most important attitude that can be formed is that of desire to go on learning. If impetus in this direction is weakened instead of being intensified, something much more than mere lack of preparation takes place. The pupil is actually robbed of native capacities which otherwise would enable him to cope with the circumstances that he meets in the course of his life. We often see persons who have had little schooling and in whose case the absence of set schooling proves to be a positive asset. They have at least retained their native common sense and power of judgment, and its exercise in the actual conditions of living has given them the precious gift of ability to learn from the experiences they have. What avail is it to win prescribed amounts of information about geography and history, to win ability to read and write, if in the process the individual loses his own soul: loses his appreciation of things worth while, of the values to which these things are relative; if he loses desire to apply what he has learned and, above all, loses the ability to extract meaning from his future experiences as they occur? (pp. 48-49)

When considered from this perspective, personalized learning presents educators with a fundamental question about the purpose and function of schooling. Should schools primarily aim to transmit pre-defined bodies of knowledge and skills to students or foster

a disposition and love for learning? Personalized learning is ill-suited to the former aim as it largely abandons prescribed content for individualized curricula tied to broad competencies such as citizenship, communication, and empirical reasoning. This study indicates personalized learning may, however, be well-suited to the latter goal as it fostered a sense of intrinsic motivation in many study participants and a "desire to go on learning" through their interests and passions (Dewey, 1938, p. 48).

As the world continues to rapidly change through globalization and advances in technology, it has never been more critical for individuals to have a disposition toward lifelong learning. The world is becoming increasingly interconnected through technology, international trade, and migration. Responsible citizenship in a globalized world requires an openness to learning about diverse cultures, ways of being, and worldviews. Economic dislocation has shaken communities across the United States and the world as the jobs of yesterday rapidly disappear and are replaced with employment that necessitates higher levels of skill and education. Economic security in the 21st century requires individuals to have the disposition and capacity for lifelong learning. As Alvin Toffler (as cited in Partnership for 21st Century Skills, 2003) presciently asserted, "The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn." This study suggests personalization may be an important mechanism for fostering the dispositions and capacities for learning, unlearning, and relearning as the world around schools continues to rapidly change.

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Appendix A: Student-Friendly Definition of Personalized Learning

Personalized learning is an approach that allows students to collaborate with their teachers to design educational experiences that match their unique interests, needs, and goals as learners. Personalized learning gives students voice and choice in what they learn, how they learn, and how they demonstrate their learning. It allows students to pursue unique learning opportunities that build on their passions, interests, curiosities, and strengths.

Bulleted Definition

Personalized learning is an approach that:

- Is a collaboration between students and teachers
- Designs educational experiences to match students' unique interests, needs, and goals as learners
- Gives students voice and choice in what they learn, how they learn, and how they demonstrate their learning
- Allows students to pursue unique learning opportunities that build on their passions, interests, curiosities, and strengths

Appendix B: High School Student Interview Protocol

Interview Procedure

You are being asked to participate in a research study on personalized learning at your school. The purpose of this study is to explore 1) how students are personalizing their learning at three high schools in Vermont and 2) how students perceive and experience these personalized learning opportunities.

During this interview, you will be asked to respond to several open-ended questions. You may choose not to answer any or all of the questions. The procedure will involve audio recording the interview, and the recording will be transcribed word-for-word. Your contributions to the study will be anonymous, and you will not be identified individually in any presentations or publications of this research. Do you have any questions before we get started?

1. I'm interested in understanding how students are personalizing their learning at your school. For the purposes of this study, I'm defining personalized learning as: *an approach that allows students to collaborate with their teachers to design educational experiences that match their unique interests, needs, and goals as learners. Personalized learning gives students voice and choice in what they learn, how they learn, and how they demonstrate their learning. It allows students to pursue unique learning opportunities that build on their passions, interests, curiosities, and strengths*. Based on this definition, can you talk about your experiences with personalized learning at your school?

   Prompts:
   - Can you talk about any opportunity you've had to design a project or learning experience based on your personal interests and/or goals?
     - Can you describe what you did for this project or learning experience?
     - What did you like about that project or experience?
     - What did you dislike about that project or experience?
   - Can you talk about a class or an opportunity where you felt like you've had voice and choice in what you learned and how you learned?
     - Can you describe what you did during this class or opportunity?
     - What did you like about that class or opportunity?
     - What did you dislike about that class or opportunity?

2. Can you talk about your experience in _____ [Odyssey, the LPP, LearnOut, or PLC]?

   Prompts:
   - What words would you use to describe your experience in [this class]?
   - What are some things you have learned about in [this class]?

- What did you enjoy about [this class]?
- What did you dislike about [this class]?
- What about [this class] is similar to your other classes in school?
- What about [this class] is different from your other classes in school?

3. Can you talk about how much freedom you feel like you have in _____ [Odyssey, the LPP, LearnOut, or PLC] to make decisions about your learning?

   Prompts:
   - How much freedom do you feel like you have in [this class] to make decisions about what you learn?
   - How much freedom do you feel like you have in [this class] to make decisions about how you learn?
   - How much freedom do you feel like you have in [this class] to make decisions about how you demonstrate your learning?
   - How much control do you feel like you have over your learning in [this class]?
   - How would you describe your sense of freedom in [this class] in comparison to other classes at your school?

4. Can you talk about your relationship with your advisor/teacher in _____ [Odyssey, the LPP, LearnOut, or PLC]?

   Prompts:
   - What kinds of interactions do you have with your advisor/teacher during [this class]?
   - What kinds of words would you use to describe your relationship with your advisor/teacher in [this class], and why would you use those words?
   - How much connection do you feel to your advisor/teacher in [this class]?

5. Can you talk about your relationships with other students in _____ [Odyssey, the LPP, LearnOut, or PLC]?

   Prompts:
   - What kinds of interactions do you have with other students in [this class]?
   - What kinds of words would you use to describe your relationship with other students in [this class], and why would you use those words?
   - How much connection do you feel to other students in [this class]?

6. Can you talk about how confident you feel in your ability to accomplish your goals and projects in _____ [Odyssey, the LPP, LearnOut, or PLC]?

   Prompts:

- Can you talk about whether you feel like the challenge of your project or learning experience in [this class] was too challenging, too easy, just right, or somewhere in between?
- What might have made you feel more confident in your ability to meet your goals in [this class]?

7. Can you talk about your motivation in _____ [Odyssey, the LPP, LearnOut, or PLC]?

   Prompts:
   - What drives or motivates your actions or behaviors in [this class]?
   - Do you feel like you're motivated by grades? A desire to socialize? Learning new things? Future career goals? Public presentations of your work?

8. Can you talk about your motivation in school more generally?

   Prompts:
   - Are your motivations in school similar to or different from your motivations in the class(es) we just talked about?
     - Can you say more about that?
   - What drives or motivates your actions or behaviors in school?
   - Do you feel like you're motivated by grades? A desire to socialize? Learning new things? Future career goals? Public presentations of your work?

9. So in thinking about your overall experience in school, can you talk about how much freedom you have to learn about things that are connected to your personal interests and goals?

   Prompts:
   - How much freedom do you feel like you have to design a learning program that matches your personal interests and goals in your school?
   - What do you think your school does well when it comes to giving you options and choices in your learning related to your personal interests and goals?
   - What do you think your school could do better when it comes to giving you options and choices in your learning related to your personal interests and goals?

10. In thinking about your overall experience in school again, how much control do you feel like you have over your learning and education?

    Prompts:
    - How much do you feel like you are able to influence:

        - What you learn about in your school?
        - How you learn in your school?
        - How you demonstrate your learning in your school?
    - What do you feel like your school does well when it comes to giving you opportunities to decide:
        - What you learn?
        - How you learn about those topics and issues?
        - How you demonstrate your learning?
    - Can you think of any obstacles you experienced to having control over your learning and education in your school?

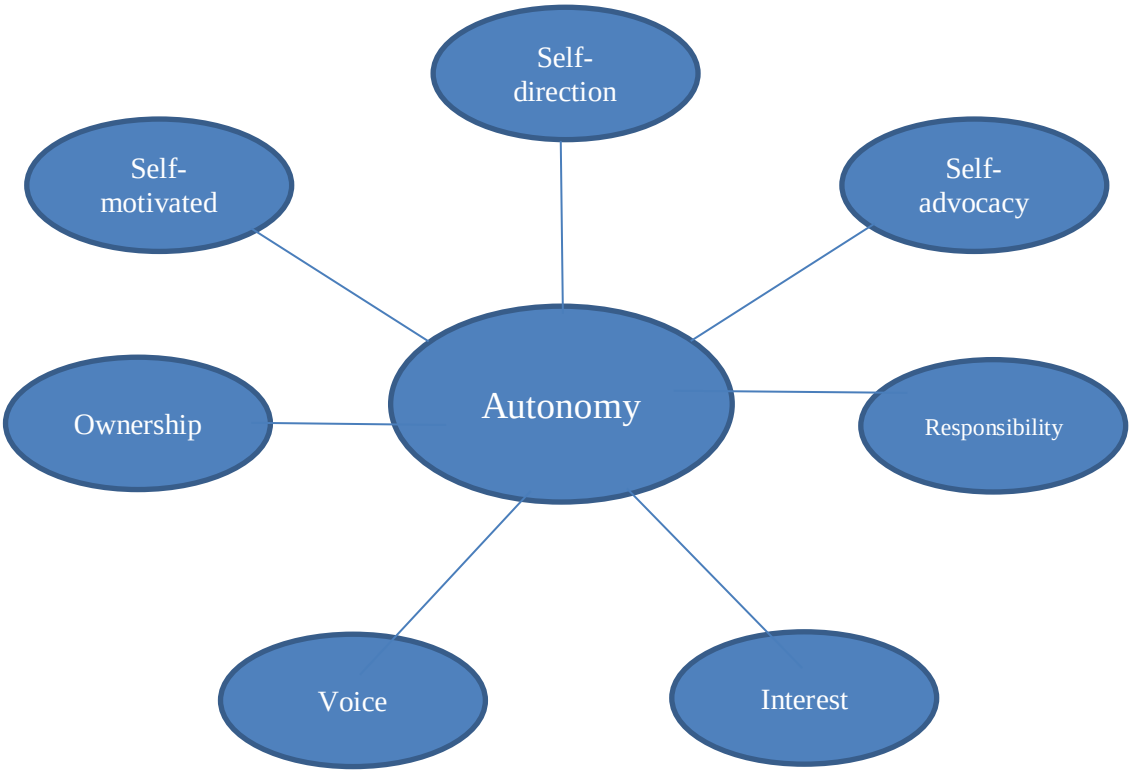
11. If you had a magic wand and could shape your school according to your own skills, interests, needs, and goals, what changes would you make so that your school represented your ideal learning environment?

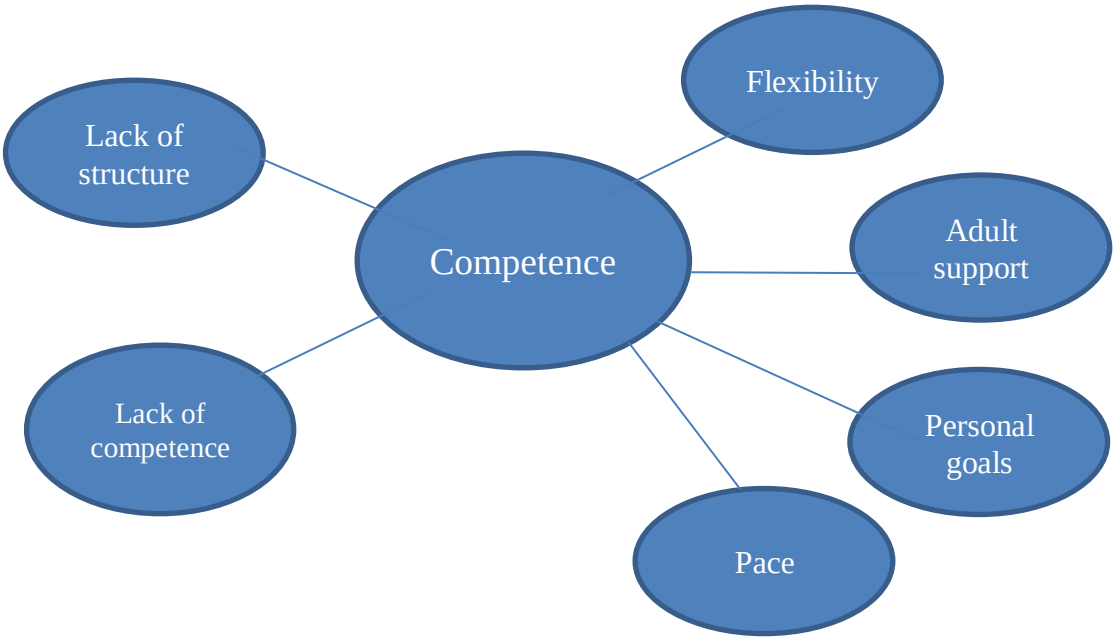
    Prompts:
        - To what extent would you change…
            - The school calendar and/or schedule?
            - The physical space or layout of the school?
            - What you learned about in school?
            - How you learned about topics in school?
            - The role of the teacher in school?
            - Your relationships with teachers?
            - The challenge of assignments and projects?
            - How you are graded or assessed on your work?

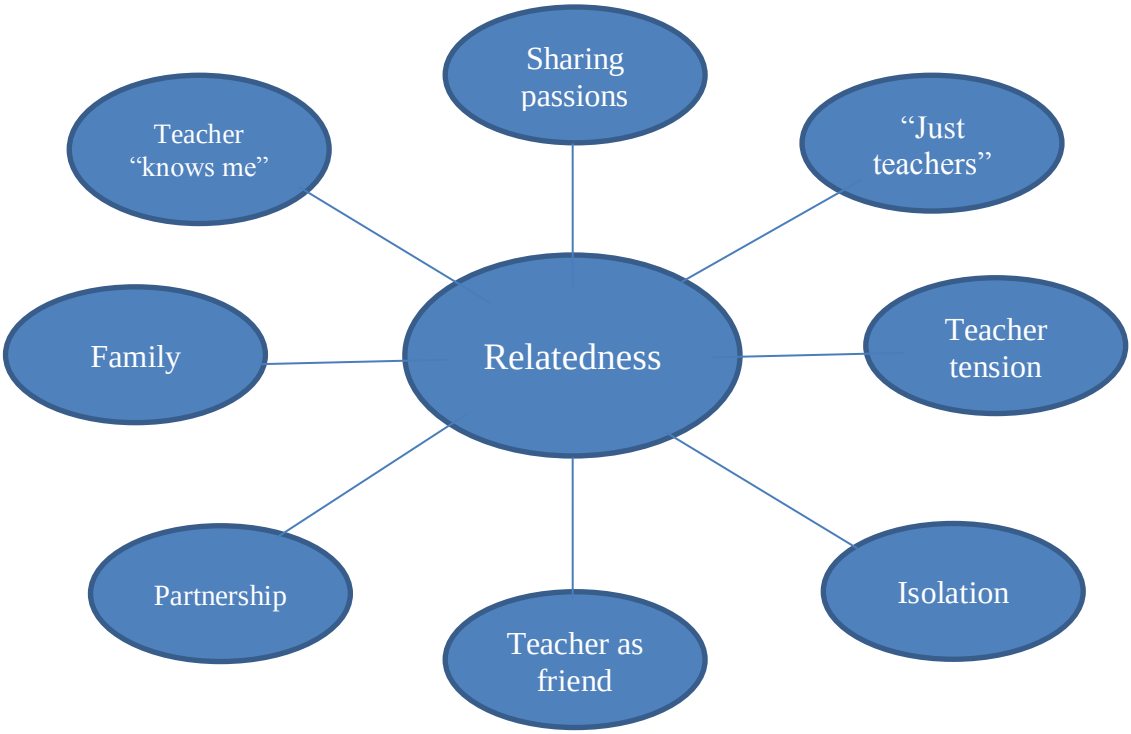
Closing

Thank you for participating in this interview. I appreciate you taking the time to speak with me. I may contact you in the future for the purpose of follow-up interviews. Again, let me assure you of the confidentiality of your responses. If you have any questions or further ideas you want me to know about, please feel free to contact me at the phone number or email address I have provided you.

Appendix C: Maps of Categories and Clustered Sub-Codes






Sharing passions
Teacher "knows me"
"Just teachers"
Family
Relatedness
Teacher tension
Partnership
Teacher as friend
Isolation


Enjoying school
Happiness
Personal growth
Wellbeing
Engagement
Stress

Appendix D: Matrices Checking for Representativeness of Sub-Codes

Sub-Code	School	Student	Quotation
"Teacher Knows Me"	AHS	Student A	"And Katherine just really knows me as a learner, and she works really hard to get to know everyone individually and know the way that they work rather than addressing the greater population in the same way. She's really good, and I feel like she's an easy person to talk to."
"Teacher Knows Me"	AHS	Student C	"I have a good relationship. At least I like to think I do. She understands what I need and how I learn different from other people, and she understands that. And she understands that I don't have the best spelling, and she helps me a lot when I'm trying to figure things out or when I'm not quite up to date in things. She has patience."
"Teacher Knows Me"	AHS	Student E	"I feel like I have a pretty good connection. There's only a couple teachers in the high school that I've had every single year, and she's one of them. And so I feel like she knows me really well as a person and as a learner. I asked her to write one of my letters of recommendation for college, even though personally I don't have that great of a connection with her. But as a student and a teacher, I feel like she knows me really well."
"Teacher Knows Me"	AHS	Student G	"I feel like Katherine knows me pretty well as a person, and she definitely has a deeper connection with other students because she's in the community and family friends. But she doesn't – or for me, I feel like she's gotten to know my personality really well and she knows – she sort of knows if I'm getting off task, how to redirect me or at least try to or when she needs to, and – yeah."
"Teacher Knows Me"	AHS	Student I	"I think that Katherine, in the Odyssey environment, she needs to talk to the students on a regular basis to make sure they're doing what they need to get done. And I think that allows her getting to know the person more. And then in other classes that I take, it's more of, 'This is what you need to do. I'm going to see if you did it, and if you didn't do it, this is what your grade is going to be.' And you can fix it if you want to."
"Teacher Knows Me"	LHS	Student O	"I feel like these teachers – I'm going to tell you straight up – these teachers are crazy, whoever wants to be part of a flexible pathway or learning – personalized learning program. Because these

			teachers are used to standing in front of a classroom and just barfing up what they know, trying to make sure you understand. These teachers are actually one-on-one with you, they know every little detail about you. And most of them want you to – they are more excited about you accomplishing something sometimes, more than you are. Like they are – they're crazy. They're awesome."
"Teacher Knows Me"	LHS	Student Q	"Those types of things, it's like teachers really getting to know you as a learner, especially here being such a small group, that's a lot easier for the teachers to do. But it's like they know me. They know my mom. They know where I live, for god's sake. They've been to my house for parties. That's just Vermont for you, but at the same time, a relationship with a teacher is everything."
"Teacher Knows Me"	LHS	Student R	"And I just really started knowing Sarah. I knew of her, but I really started knowing her last year when I was searching for my internship because I was like 'I want an internship my senior year – Sarah, you have to help me.' And so I think her openness – both of their openness and desire to know their students, like actually know them – creates this very welcoming and helpful environment, which was then able to lead to amazing experiences."

Sub-Code	**School**	**Student**	**Quotation**
Individualized Interactions	AHS	Student A	"Well, the way the room is arranged, there's the table and the den separated, but then there's the coffee table with all the chairs and the couch around it, and we all usually just sit in a circle, and we go around the circle and check in with her and check in on what we're going to be doing that day, and then she'll pull people aside throughout the class period and just check up on work that you did the day before, just how you're doing and give you any extra information, and that's good."
Individualized Interactions	AHS	Student B	"It's much more connected in the Odyssey program. I feel like it's a lot more personal in the Odyssey program than it is in other classes. Because it seems like the Odyssey, even though she has so many students, it's very one-on-one because every student is doing something different, so it's not like she's just addressing a

			group. When she's talking to you, she's talking specifically to you about whatever it is that only you are doing. Where if you're being addressed in a class, it's the group. Everybody's doing the same thing. So it's a lot more personal and specific."
Individualized Interactions	AHS	Student I	"I think that Katherine in the Odyssey environment, she needs to talk to the students on a regular basis to make sure they're doing what they need to get done. And I think that allows her getting to know the person more, and then in other classes that I take, it's more of, 'This is what you need to do. I'm going to see if you did it, and if you didn't do it, this is what your grade is going to be.' And you can fix it if you want to."
Individualized Interactions	LHS	Student Q	"And when I'm here talking – when he's trying to teach me about the things that I'm trying to teach him almost, it's like, all right, I can listen, I can pay attention. And then you pay attention and you listen, and you realize I'm not that bad and everything's fine and the teachers are chill. You just have to play by their rules to a certain point, I guess."
Individualized Interactions	LHS	Student M	"Like a lot of the time – and maybe some kids need that to kind of understand what they're about to be doing, but when they do come in – they do come in every day and check on us and what we're doing, making sure that we're on task and all that stuff, and give us advice about it. So it's pretty good day-to-day interactions."
Individualized Interactions	LHS	Student O	"Because these teachers are used to standing in front of a classroom and just barfing up what they know, trying to make sure you understand. These teachers are actually one-on-one with you, they know every little detail about you. And most of them want you to – they are more excited about you accomplishing something sometimes, more than you are. Like they are – they're crazy."
Individualized Interactions	RHS	Student V	"The teachers – some of the teachers in there really like *They Might be Giants*, which is a band I love. And so just in talking to the teachers, I found out that there are certain things that we share an interest in outside of school that carries over to our school relationship just because we're almost like friends, as much as student and teacher can be. So I feel a pretty close connection with those teachers."

Individualized Interactions	RHS	Student Y	"They're fantastic. Always there if you need help, you can always pull them aside for a sec. And they cover a wide variety of subjects so if you have questions on something and you need help, any one of them can probably help you." "Pretty good connection. One of them in particular, Mr. Parker, he and I converse a lot, like if I'm feeling stressed out in the day. I'm sure I can talk to Mr. Jones or Miss Allison. It's just he was the first one I really connected with because just – I got a read of him that he was very, very approachable. Not to say that nobody else in the school is but that was just my first impression of him."
Individualized Interactions	RHS	Student Z	"We're more close because during times when we're just talking to each other, we get to know about what we do and what they do and their hobbies, what's going on in their lives."

Sub-Code	**School**	**Student**	**Quotation**
Family	AHS	Student J	"My relationship with other students in Odyssey is awesome. I love everybody in the room; I love everybody in the school. So I don't really – it's functional but dysfunctional. It's like a family."
Family	LHS	Student N	"If I need help, I can definitely turn to one and be like, 'Hey, man, what are you doing on that project, like how are you doing?' And he'd help me out and try to like help me if Michael or Tom isn't around or something like that. And just like hanging out, too, at the same time, because I feel like we're kind of like a small school family, group family – I don't know, it's weird. But they're just always around, and it's pretty cool because I can connect with them better because there's not a lot of people like I'm not around in a big school."
Family	LHS	Student O	"Some kids aren't here as much as others so sometimes they get a little out of the group, but I just feel like everybody's like a big family because we're all here to learn and they're not judgmental."
Family	LHS	Student P	"They're kind of like friends. Last year, Keith and Heather were the teachers here and were kind of like our LPP parents. And it's such a personal connection that it feels like they really do care about you and I think that they really do."

Family	LHS	Student P	"We're kind of like a family and this is our house, since it's such a small group of kids. We all know each other pretty well. So whenever someone new comes into the program, it's always like when your mom has another baby. But everyone's pretty close, and we're all pretty open with each other about how we feel, and it's not like there's any cliques here or drama and everyone here is kind of against that."
Family	LHS	Student Q	"Definitely more personal. More of a personal relationship. But I'm around them, too, for the whole 3 hours I'm here. So I'm not going to one forty-minute class saying peace out to that teacher until the next day or the day after. It's like they know everything. They know everything about what's going on here with me. And when they have that type of connection with you, you know it. You know that. It's like talking to your mom or dad about your homework. They can help you in any way that you need help with."